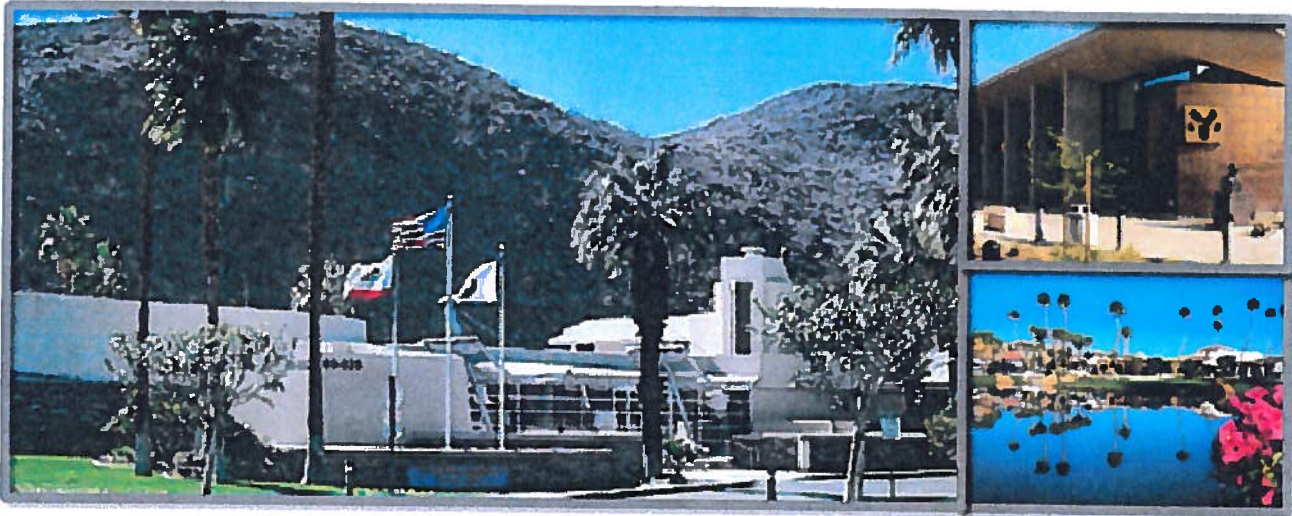




Rancho Mirage Energy Action Plan

March 2013



2013 Energy Action Plan



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I. Executive Summary

An Energy Action Plan (ePlan) is a living document. It is meant to change with time, experience and need. The purpose of this Energy Action Plan is to identify actions necessary to meet the City's future energy needs, consistent with energy policies set forth by the State of California.

This ePlan provides a roadmap of actions within the City's municipal operations, to help reduce energy consumption, to reduce operating costs, and increase energy awareness. The ePlan presents a detailed breakdown of municipal energy use in Rancho Mirage, and then provides a series of energy-related goals for the coming three years through 2015 and beyond. The goals focus on three areas: retrofit and expansion of municipal facilities, upgrading the municipal fleet, and consideration of municipal programs and actions that will help reduce municipal and community-wide energy use and greenhouse gas (GHG) emissions. The City will achieve the goals contained in the ePlan by taking specific and measurable actions in all City facilities. At the same time it will consider energy efficiency in decisions and actions affecting the region.

Cost-effective energy efficiency is the resource of first choice for meeting California's energy needs. The Cities of Blythe, Cathedral City, Desert Hot Springs, Indian Wells, and Palm Springs join Rancho Mirage, as well as the Agua Caliente Band of Cahuilla Indians in this effort, led by CVAG, to implement projects in support of the California Energy Efficiency Strategic Plan. Funding provided by the California Public Utilities Commission (CPUC) through SCE has offered many opportunities to assist the participating jurisdictions gauge where they stand and where to go from here, under the umbrella of sustainability entitled Green for Life.

The City of Rancho Mirage has been successful at planning and implementing municipal energy efficiency projects. The City has also encouraged energy efficiency with private development and throughout the community. In the current challenging economic environment, the City will continue to maintain a strategic stance to take advantage of opportunities, which make sense for Rancho Mirage. The City will use its resources wisely, seeking to leverage federal, state and

regional grants, utility incentives and other funding sources, while tracking emerging technologies that offer pragmatic solutions for the reduction of energy use and GHG emissions. In every case, the goal is to take action that is cost-effective and provides economic and environmental benefits to the City, its residents, and the region.

This ePlan represents a distillation of a comprehensive energy action planning process. It will serve as a basis for continued evaluation and implementation of energy saving options and, a guide for tracking ongoing results. Through municipal leadership, the community will be encouraged and engaged, with the help of appropriate analysis, to recognize that returns on energy efficiency upgrades are often better than other investments. Energy efficiency upgrades also result in environmental benefits, as well as basic creature comfort benefits, such as better lighting and improved temperature control in the home or work environment.

Each year, the City of Rancho Mirage spends nearly \$500,000 on energy, electricity, natural gas, and fuel for its vehicle fleet. The City's largest energy cost in 2010, more than \$415,000, was electricity for municipal accounts. The next largest bill was vehicle fuel, just above \$55,000. Natural gas costs were estimated to be around \$16,000. This annual expenditure stands as a reminder to the City of its potential to cut energy costs. Energy saved makes City resources available for reallocation to the pressing needs of job retention, economic development, continued public safety, and other City services. Energy savings can also be reinvested in future energy retrofits to generate additional energy savings and the associated greenhouse gas (GHG) reduction.

Rancho Mirage

Spends nearly

\$500,000

on Energy

- Electricity \$415,000
- Vehicle Fuel \$55,000
- Natural Gas \$16,000

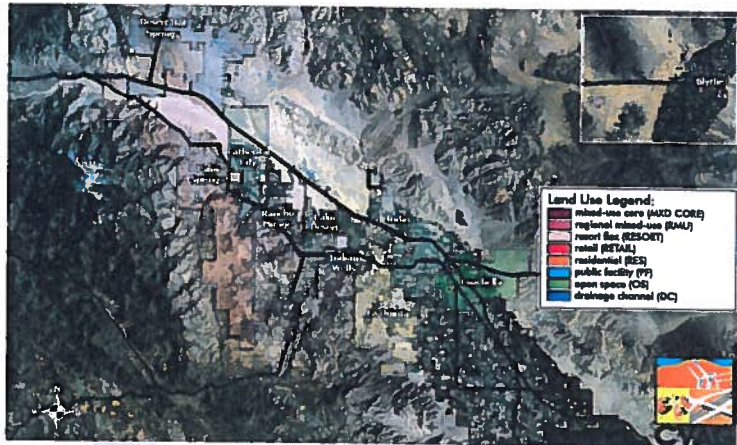
This Energy Action Plan dovetails with the 2012 Rancho Mirage Sustainability Plan. The ePlan, as part of the Sustainability Plan, will ultimately be referenced in the next update of the City's General Plan. A Greenhouse Gas Inventory¹ (GHG inventory) and the City's Sustainability Plan², (GHG reduction plan) complement the energy saving strategies in this ePlan and factor emissions reduction opportunities into a more comprehensive analysis. Together, these plans guide the City and support the City's goals for economic viability, community benefits, and environmental stewardship.

¹ Rancho Mirage Greenhouse Gas Inventory, 2010 Community and Municipal Operations Inventories, May 2012, (Section III).

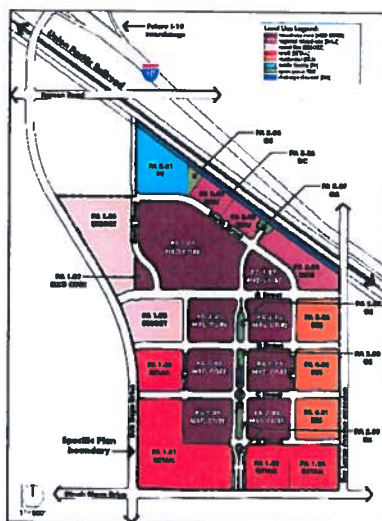
² City of Rancho Mirage 2012 Sustainability Plan: Leadership in Energy Efficiency (June 2012). (Section I)

II. Introduction

Rancho Mirage is a business and resort community nestled at the base of the Santa Rosa Mountains, in the Coachella Valley of eastern Riverside County. The City is bordered on the west by the Cathedral City and on the east by Palm Desert. The City currently includes 24.84 square miles of land, extending from the Santa Rosa Mountains on the south to the Interstate 10 Freeway (I-10) on the north.



Based on the 2010 Census the City of Rancho Mirage had a population of 17,218 residents. The climate and leisure activities attract seasonal residents nearly doubling the population during winter months. In recent years, Rancho Mirage has been successful in expanding its economy from seasonal resort activity to include commercial projects near the I-10 freeway. This development includes the Section 19 Specific Plan and high-end retail centers like The River on Highway 111.



The city limits of Rancho Mirage include the Agua Caliente Band of Cahuilla Indians Reservation land. This land constitutes approximately 11% of the total built-out acreage within the City limits. The 2010 Agua Caliente Band of Cahuilla Indians' Greenhouse Gas Inventory prepared as a part of Green for Life, provides a full explanation of how Tribal emissions are accounted for given the overlap of jurisdictions.

The City of Rancho Mirage has made it a commitment to preserve the important environmental and cultural assets of the community in its General Plan, most recently updated in 2005. The General Plan includes a policy that, "The City shall promote energy efficiency and conservation in all areas of community development, including transportation, development planning, and public and private sector construction and operation, as well as in the full range of residential and non-residential projects."

Participating in the Green for Life program, administered by CVAG, is a major, recent expression of this commitment. The Green for Life program reexamines municipal facilities and their management, and benchmarks GHGs to create both Sustainability and Energy Action Plans to help the City save valuable resources. The ePlan compliments the 2012 Rancho Mirage

Sustainability Plan, serving as its municipal sector guide to energy savings and compliance. Together, these Plans will be referenced in the City's General Plan when it is updated.

DRAFT

III. Energy Action: Vision and Goals

This 2012 Energy Action Plan brings together the City's goals and objectives to cut energy use in municipal facilities and to attain the highest efficiency levels practical. It focuses on ways the City can reduce costs at the same time as energy efficiency is enhanced. In 2009 a valley-wide goal to reduce energy use by 10% was adopted by CVAG, with a 2005 baseline year, consistent with the Desert Cities Energy Partnership. The City's goal is to attain a 10% reduction in energy use from Rancho Mirage's 2005 baseline by 2015. To reach this goal, the City will have to achieve another 60,049 kWh of annual savings by 2015.

As a result of the recession, the City has faced some economic challenges. The loss of Redevelopment Agency funding in 2012 also had an impact. This ePlan prepares the City for smart energy management, finding ways to cut costs and to provide immediate benefit for the City and its residents. This ePlan maps out a path to be proactive, for the City to lead by example, with a focus on increasing the efficiency and cost-effectiveness of its infrastructure and the community's homes and businesses. In the process, the City is eager to create and support green jobs.

Through the adoption of this ePlan and its proposed actions, the City of Rancho Mirage is set to make great strides toward achieving its energy action goals. Some of the initiatives identified in this ePlan are already being integrated into the budgeting and planning process, as the City moves aggressively toward its 10% energy reduction target for both municipal and community-wide savings. In other areas, and especially as the City considers initiatives for 2020 and beyond, plans will necessarily be adjusted to account for the effects of emerging technologies, new opportunities and beneficial strategies that may arise in the future. This ePlan is designed to be flexible and will be reviewed and updated regularly to ensure it reflects the most effective strategies for the City to achieve its energy and GHG reduction goals.

Rancho Mirage

10%

Energy Reduction Goal

IV. A Track Record of Energy Action in Rancho Mirage

The City of Rancho Mirage has an extensive record of smart energy management, getting its “own house in order” while promoting environmental conservation and stewardship throughout the City’s residential communities and commercial activities:

- Installation in 2010 of a new, energy-efficient chiller for air conditioning at the Rancho Mirage Public Library.
- Participation in various SCE programs accounted for the second largest energy savings. Through SCE’s Energy Leader Partnership of the Desert Cities Energy Partnership (DCEP), Rancho Mirage saved over 3 million kWh in 2010.
- High points of the City’s track record include emphasis on waste diversion and recycling, which in 2010 was responsible for 82% of GHG emissions reductions.
- The City has two innovative commercial food waste recycling programs: the Highway 111 restaurant food waste composting project and the “Hidden Harvest” program where fresh, unused citrus from fruit trees is collected from fruit trees by residents within the community and transfers it to a local food bank for distribution.
- Since 2010, the City has placed even more emphasis on recycling, including paper shredding, electronic waste, used motor oil and other household hazardous wastes and now extends those services for their commercial and multi-family properties.
- Participation in various SCE programs accounted for the second largest energy savings. Through SCE’s Energy Leader Partnership of the Desert Cities Energy Partnership (DCEP), Rancho Mirage saved over 3 million kWh in 2010.

Rancho Mirage

**Sustainability Programs
for 2010**

Reduced Emissions

by 6.3%

82%

**Of Rancho Mirage's
2010 Emissions Reduction
Came from
Solid Waste Diversion**

SCE Programs helped

**Save over 3 Million kWh
In 2010**

Through the California Solar Initiative, property owners in the City added over 3 million kWh to the grid, offsetting over \$700,000 worth of energy costs that would otherwise have been a direct expense to City residents.

Other savings programs sponsored or supported by the City of Rancho Mirage include:

- Conversion of traffic signals from incandescent lamps to light emitting diode (LED) lamps, the first city in the Coachella Valley to do so in 1999. The City's use of LED traffic and pedestrian signal indicators instead of incandescent lights reduced energy consumption by 66%.
- Change of high-water use landscaping to water efficient landscaping in medians, parkways and municipal properties, for water and associated electricity savings.
- Constant monitoring and adjustment, via the internet, of both City Hall and Library HVAC (heating/ventilating/air conditioning) systems to save energy and operate efficiently.
- Natural gas reduction measures through Southern California Gas (SoCalGas), representing savings in 2010 of 11,275 therms.
- Approval of a water-efficient landscape ordinance in March 2010
- Water savings derived from a City partnership with CVWD's for a Turf Conversion Rebate Program.
- Lighting conversion in citywide landscaping from 150-watt incandescent to 26-watt fluorescent lamps.

Coachella Valley 1st
LED Traffic Signal Conversion
 Reduced signal consumption
 by **66%**

SoCalGas Programs (2010)
 helped save over
11,275 therms

Community Action through Partnerships

The Desert Cities Energy Partnership (DCEP)



Since 2009, the City has been an active participant in the DCEP. A partnership of CVAG local jurisdictions, SCE, SoCalGas, and Imperial Irrigation District (IID), the DCEP has kept a keen focus on energy efficiency in municipal facilities.

As a Valued Partner in the program, Rancho Mirage has taken advantage of support and co-branded marketing through the Partnership, committing to energy efficiency upgrades, and participating in

demand response plans. Specific projects include a chiller project at the library and the installation of plug load occupancy sensors/powerstrips to reduce energy use in City offices. In 2012, the City completed lighting retrofits at the Public Library, City Hall, and City Hall Annex. The completion of this ePlan will help move Rancho Mirage to the next tier in the Energy Leader Partnership that offers increased incentives for additional municipal energy upgrades. See Section IX for a list of tier level criteria for the SCE Energy Leadership Program.

Green for Life

The Green for Life program is funded by SCE under the auspices of the CPUC and administered by CVAG. It provides Rancho Mirage, five other local cities within the SCE service territory, and the Agua Caliente Band of Cahuilla Indians with a number of valuable services, including:

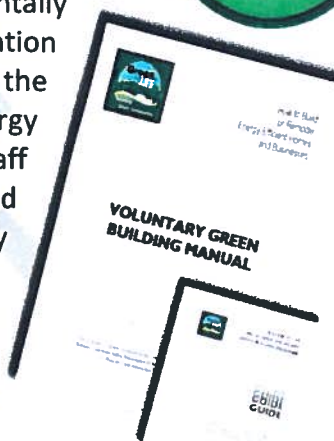


1. **Building “Tune-ups” Through Commissioning/Retro-Commissioning (RCx):** A Commissioning/Retro-commissioning policy (Master Document Appendix C) to help the City plan for equipment maintenance, improvements and retrofits to reduce energy costs. RCx is a systematic process to investigate and optimize the operation and maintenance of buildings and their operating systems. It primarily focuses on energy using equipment and low-cost improvements rather than expensive capital intensive retrofit measures. RCx identifies the best ways to improve occupant comfort, save energy and lower electricity bills, while extending the useful life of mechanical systems. The RCx policy describes what is needed to maintain buildings and equipment at optimal levels. Staff will follow the policy on an ongoing basis, as funding is available.
2. **Benchmarking:** Benchmarking is a method of comparing a building’s performance against an agreed upon standard, as well as comparing buildings similar in size, climate zone, occupancy and type to each other. City staff will learn how to benchmark City facilities using the EPA Portfolio Manager program. Benchmarking will allow the City to set a baseline for current energy use that can be compared to energy use after efficiency programs are implemented. Portfolio Manager will allow staff to track building energy performance, assess energy management goals over time, and identify strategic opportunities for savings in a secure online environment. A customized Benchmarking Policy (Master Document Appendix B) has also been prepared, which provides guidance to staff on the maintenance and updating of benchmarking efforts.
3. **Utility Manager Program – Enterprise Energy Management Information System (EEMIS):** Through the Green for Life Program, the City will be provided with and trained to use the EEMIS utility management system. This system, provided through and maintained by Los Angeles County and supported by SCE, will acquire energy consumption information in order to determine the impact of increasing rates and to identify possible opportunities for improving building efficiencies. Los Angeles County has ensured compatibility with the new metering capabilities provided by SCE. Monthly reports will allow the City to more effectively manage its current electricity budget. The system will highlight energy intensive facilities, time periods, flag anomalies in usage, and will allow for comparisons with like facilities in similar climate zones so best



practices can be put in place to cut costs, including the planning for timely system upgrades or maintenance.

4. **Voluntary Green Building Program:** A regional Voluntary Green Building Program has been developed, and was adopted on July 27, 2012 by the City Council, to encourage property owners of new and remodeled homes, apartments and businesses to reduce their energy use and make their buildings environmentally friendly. This program provides comprehensive information to encourage contractors and building owners to exceed the California Building standards Code (Title 24) for energy efficiency by 15%. The program, complete with staff training and outreach/education for contractors and community members, provides tools to increase energy efficiency and reduce GHG emissions. It is available on the Green for Life website and a Green Building web tool/application (“App”) is being developed. These web tools will link to and compliment the City’s extensive website focused on environmental programs.



5. **Greenhouse Gas (GHG) Inventory:** Green for Life has provided the City with a 2010 Greenhouse Gas Inventory. Following industry protocols, the document identifies the total amount of GHGs attributed to municipal activities and the community in the baseline year, providing a starting point for future emissions reduction actions.

6. **Sustainability Plan:** To complement this Energy Action Plan, a Rancho Mirage Sustainability Plan has been prepared. Based on findings from the GHG Inventory, plus staff and stakeholder input, the Sustainability Plan lays out the emissions reduction goals for the entire community and then offers a step-by-step roadmap of recommended actions for reaching those goals.



7. **Energy Action Plans:** This Energy Action Plan focuses on municipal energy use and opportunities for the city to “lead by example” to influence community-wide behavior. It is based on findings from an audit of city facilities, SCE review of energy efficiency measures, the GHG Inventory, and input from staff and stakeholders. It defines next steps for energy savings or energy management upgrades for municipal buildings in terms of costs to the City and also in terms of relative cost-effectiveness (i.e., cost per kilowatt hour saved, or cost per tonne³ of emissions reduction).

³ GHG emissions are measured in metric tons, or “tonnes,” of carbon dioxide (CO₂). Other gases are converted to their equivalents of CO₂ and tracked as “tonnes CO₂e.”

8. **Regional Planning:** A final element of Green for Life, and one important to Rancho Mirage, is a regional planning assessment. How do tourism and climate protection work together? How can the region get carbon credits for local solar, wind, and geothermal installations? Coordination will continue between the cities and tribes, with a sharp focus on regional planning issues, from job creation to mitigating emissions related to regional facilities such as airport and highway operations.

Awards and Recognition

Various organizations in the City have received awards for environmental stewardship and design:

San Jacinto Villas, City of Rancho Mirage

LEED Silver

Grand Award, 55+ Housing, Builder's Choice 2011

Children's Discovery Museum

"Connecting the Old and the New," Museum Design, 2006

INFORM Award for Excellence in Design, American Institute of Architects, 2000

Eisenhower Medical Center Annenberg Pavilion – New Patient Tower

Award of Merit, California Construction Best of 2010

Sunnylands Center & Gardens at the Annenberg Retreat at Sunnylands

LEED Gold, 2011

Section 19 Specific Plan

SCAG Compass Blueprint Achievement Award – Visionary Planning for Livability, 2010

American Planning Association, Inland Empire Section, California Chapter – Neighborhood Planning Award, 2010

The River

American Planning Association, Inland Empire Section, California Chapter – Outstanding Planning Project, 2004

V. Rancho Mirage Municipal and Community Energy Usage

A summary of energy usage for municipal, commercial, residential and other activities within the city limits of Rancho Mirage for the baseline year 2010 is provided in this section. Municipal energy usage is described for city owned facilities. Community energy usage includes residential and commercial accounts within the City of Rancho Mirage.

Municipal Electricity Usage for 2010

In 2010, 2,767,336 kWh of electricity were used in Rancho Mirage municipal facilities at a cost of \$417,404, representing 1.9% of the City's 2010 budget. Electricity usage data is provided by SCE; municipal energy use is included in various SCE rate groups, including commercial and domestic rate groups.

Table 1: 2010 Rancho Mirage Municipal Electricity Usage by SCE Rate Group

Rate Group	Usage (kWh)
Small Commercial	244,462
Medium Commercial and Industrial	1,626,504
Street Lighting	380,383
Traffic Control	195,408
Domestic	320,579
TOTAL	2,767,336

Figure 1: 2010 Municipal Electricity Usage (kWh) by SCE Rate Group

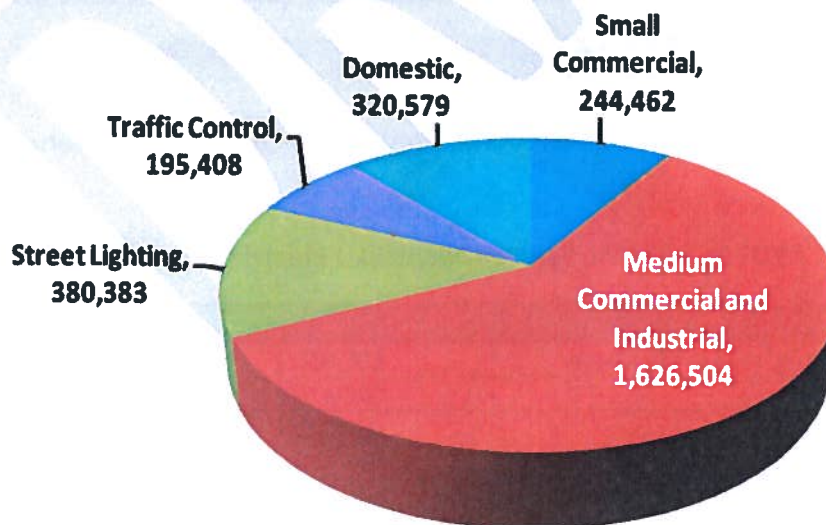


Table 2 shows the electricity usage for various City facilities as well as the annual cost for 2010. The Library and City Hall, the largest municipal buildings, together constitute almost half of the total electricity usage.

Table 2: 2010 Municipal Electricity Usage by Identified City Facilities

Major Facilities	Cost	Usage (kWh)	% of TOTAL
City of Rancho Mirage Public Library	\$95,936	691,401	25.0%
City Hall	\$70,470	475,106	17.2%
City Hall Annex Building	\$30,276	219,420	7.9%
Parkview Villas Affordable Housing	\$19,864	126,362	4.6%
Riverside County Fire Station 50	\$15,722	95,190	3.4%
Riverside County Fire Station 69	\$12,690	81,327	2.9%
Medians and Intersection Accounts	\$17,377	75,413	2.7%
Whispering Waters Senior Residential Complex	\$10,866	66,262	2.4%
Pedestal Accounts	\$31,140	40,485	1.5%
Total	\$304,341	1,870,966	67.6%

Public Lighting	Cost	Usage (kWh)	% of TOTAL
Street Lights	\$42,222	333,552	12.1%
Traffic Signals/Controllers	\$29,919	195,408	7.1%
Park and Public Spaces Lighting	\$5,621	46,831	1.7%
Total	\$77,762	575,791	20.9%

Domestic	Cost	Usage (kWh)	% of TOTAL
Rancho Palms Mobile Home Park	\$25,020	279,120	10.1%
Santa Rosa Villas Affordable Housing	\$10,281	41,459	1.5%
Total	\$35,301	320,579	11.6%

Total	\$417,404	2,767,336
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All municipal electricity bills from 2010 were organized by usage and cost. Generally, cost increases as usage increases.

Table 3: 2010 Rancho Mirage Top Municipal Electricity Users

Electricity End Use	Annual Cost	Usage (kWh)
City of Rancho Mirage Public Library	\$95,936	691,401
City Hall	\$70,470	475,106
Street Lights	\$42,222	333,552
Rancho Palms Mobile Home Park	\$25,020	279,120
City Hall Annex Building	\$30,276	219,420
Traffic Signals/Controllers	\$29,919	195,408
Parkview Villas Affordable Housing	\$19,864	126,362
Riverside County Fire Station 50	\$15,722	95,190
Riverside County Fire Station 69	\$12,690	81,327

Figure 2: 2010 Rancho Mirage Top Municipal Electricity Users (kWh)

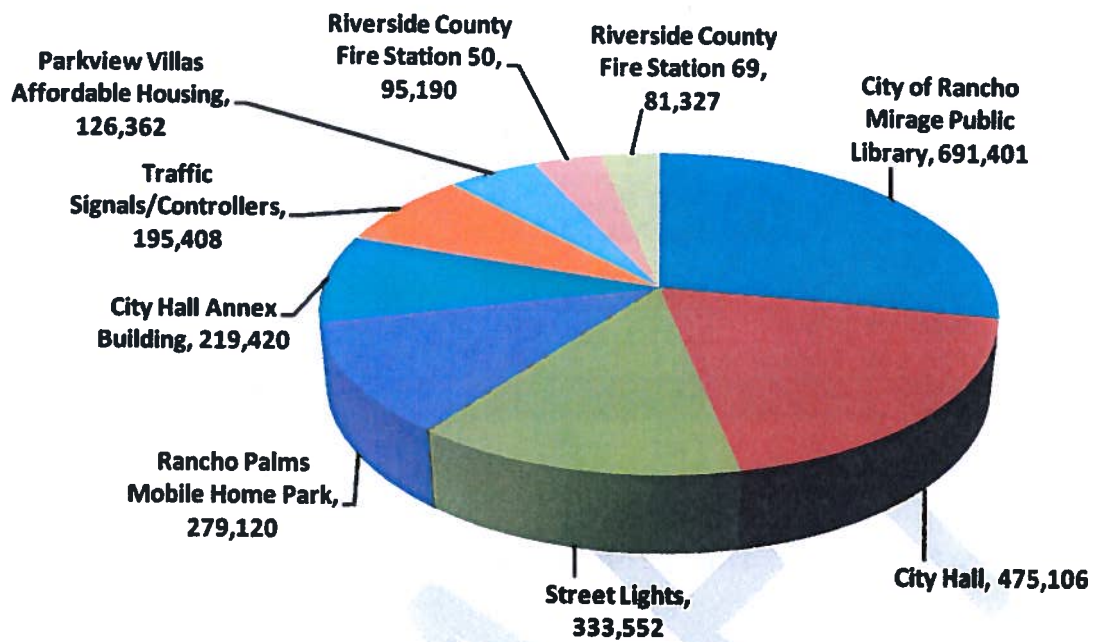
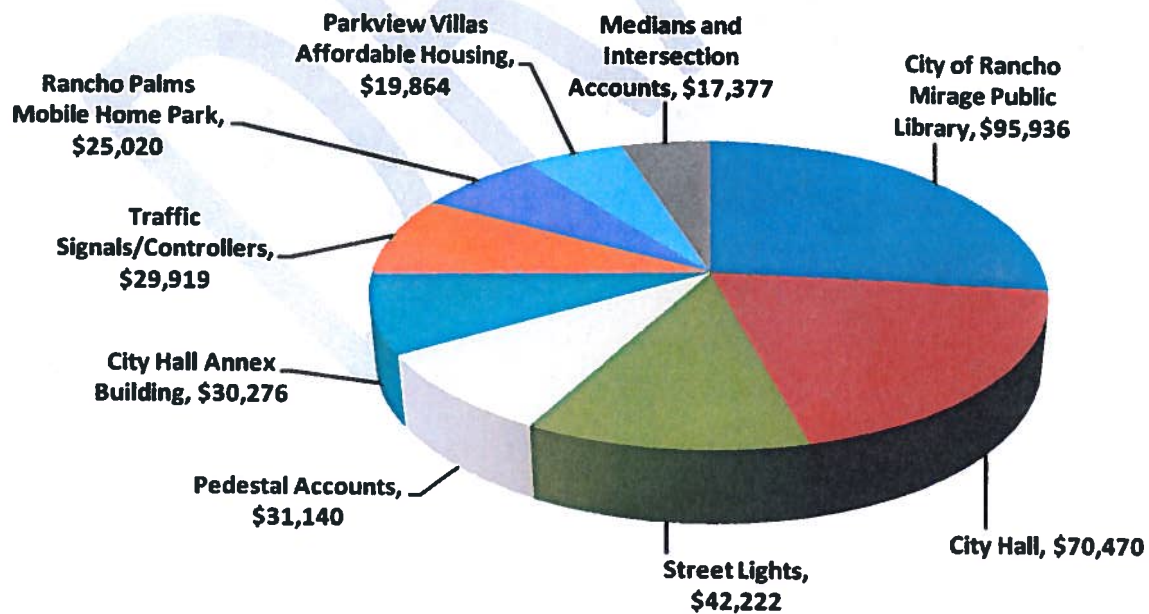


Figure 3: 2010 Rancho Mirage Top Municipal Electricity Users (Annual Cost)



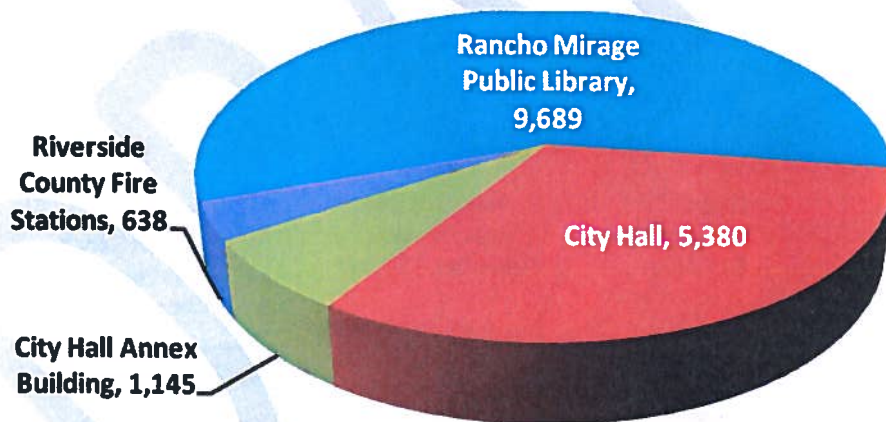
Municipal Natural Gas Consumption

According to information provided by SoCalGas, the City also consumed 16,852 therms of natural gas in 2010 at an estimated cost of \$16,009. Natural gas is used for heating, water heating and cooking. Well over 50% of the gas used was consumed at the Public Library.

Table 4: 2010 Rancho Mirage Municipal Natural Gas Consumption

Facility Name	Usage (Therms)	Est. Cost per Therm	Est. Total Annual Cost
Rancho Mirage Public Library	9,689	\$0.95	\$9,205
City Hall	5,380	\$0.95	\$5,111
City Hall Annex Building	1,145	\$0.95	\$1,088
Riverside County Fire Stations	638	\$0.95	\$606
Total Municipal Facilities	16,852	-	\$16,010

Figure 4: 2010 Rancho Mirage Municipal Natural Gas Consumption



2010 Municipal vs. Community Electricity Usage and Natural Gas Consumption

The City's municipal energy consumption is a small fraction of the citywide energy usage. Figures 5 and 6 show citywide energy usage, including both municipal accounts and all other accounts (residential and commercial), in Rancho Mirage.

Figure 5: 2010 Rancho Mirage Community vs. Municipal Electricity Usage (kWh)

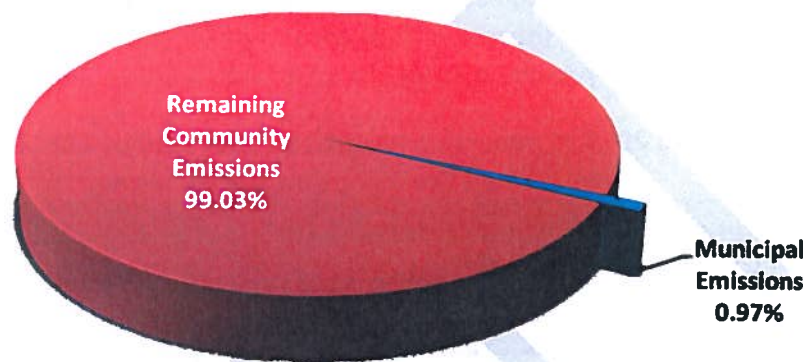
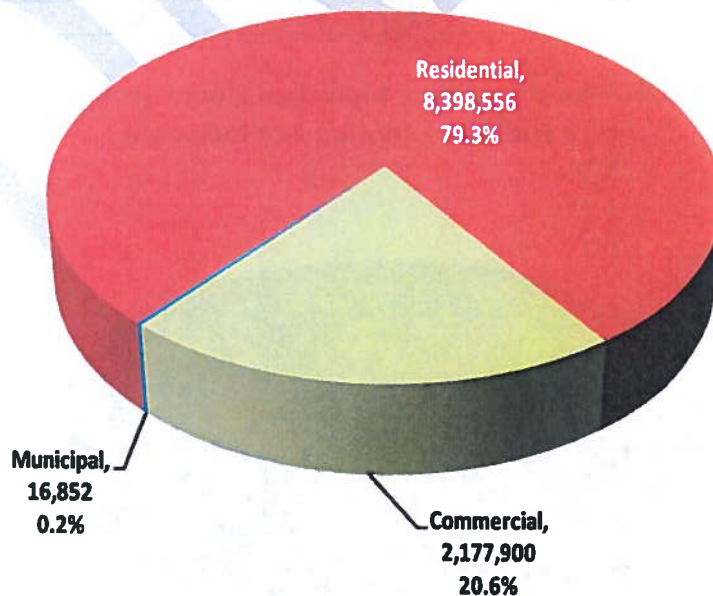


Figure 6: 2010 Rancho Mirage Community Natural Gas Consumption (therms)



Municipal Vehicle Fleet

Rancho Mirage's vehicle fleet calculations were based on 41 vehicles (12 for the police) and 29 pieces of equipment, primarily operated by the Public Works department. The fleet vehicles were driven 250,579 miles in 2010, consuming an estimated 12,768 gallons of gasoline, 3,001 gallons of diesel, and 2,807 gallons of compressed natural gas. Riverside County Fire and Sheriff Departments' fleet fuel consumption is included in the municipal inventory (the fleets produced approximately 118 tonnes of CO₂e) as they are under contract with the City regardless that the usage of the vehicles and the fuel they consume is not within the City's control. This fleet fuel consumption falls within Scope 3 emissions given that these municipal services have been outsourced by the City. Outsourced landscaping and city-wide street sweeping fleet fuel consumption or mileage was not collected and not included in the Municipal GHG Inventory. It is recommended that these two sources of fuel consumption should be collected and included in the City's next inventory to provide a more complete set of Scope 3 emissions.

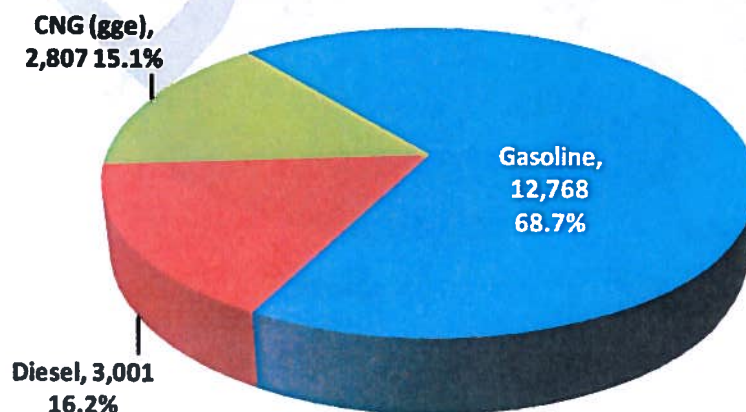
**Table 5: 2010 Summary of Municipal Fleet Fuel by Fuel Type
(Scope 3 Fuel Consumption Not Included)**

Fuel Type	Est. Gallons Used	Fuel Cost per Gallon	Est. Total Annual Cost
CNG (gge)	2,807	\$2.50	\$7,017
Diesel	3,001	\$3.44	\$10,322
Gasoline	12,768	\$3.00	\$38,305
Total			\$55,644

**Table 6: Breakdown of Municipal Fleet Fuel by On and Off-Road and Fuel Type
(Scope 3 Fuel Consumption Not Included)**

	CNG	Diesel	Gasoline	Miles Driven
Municipal On-Road	2,807	404	12,768	250,579
Municipal Off-Road/Mobile		2,597		-
TOTAL	2,807	3,001	12,768	250,579

**Figure 7: 2010 Rancho Mirage Municipal Fleet Fuel (gallons)
(Scope 3 Fuel Consumption Not Included)**



VI. Rancho Mirage Energy and Cost Management Goals

Rancho Mirage is a Valley leader in energy efficiency and green building, recognized for its LEED Silver library. But like many other California cities, Rancho Mirage has been hit by the prolonged recession as it actively works to balance its budget and assure appropriate reserves are available.

Despite valuable resort properties and the famed Eisenhower Medical Center, the City has no major industry and with property values depressed, it has had to trim operations. The City of Rancho Mirage is exploring energy options, including the concept of forming a Community Choice Aggregation to buy electrical power for its residents on the open market, adding city-owned solar panels into the mix, or providing new green energy incentives for residents. Any of these choices or a combination of all would have significant impact on community wide energy use and GHG emissions in the future.

Economic realities necessarily shape the goals in this ePlan. The goals presented are pragmatic, reasonable steps for the next three years, to 2015. However, the City is making a commitment to energy action and plans to continue to implement the goals and objectives of this ePlan beyond 2015. The goals are planning and implementation steps that will be revisited in years to come, and as the economy and technology improves, staff and city officials will have the opportunity to make these goals and proactive steps ever more aggressive.

The goals fall into three categories: City Facilities, City Fleet, and Community-Wide Policies.

City Facilities

By the end of 2011, the City had cut its 2004 baseline municipal energy use by 105,115 kWh, or 6.4%, from its 1,651,643 kWh baseline. Much of this was accomplished through an upgrade to the chiller at the library. As of December 2012, the City reduced its energy use by an additional 40,675 kWh for a total of 145,790 kWh. As of March 2013, SCE revised its Energy Leader Partnership Model 2004 energy baseline (1,651,643 kWh) to 2006 (2,160,257 kWh).

- **10% by 2015:** Rancho Mirage will continue to find ways to cut energy use in City facilities and to attain the highest efficiency levels practical. The immediate goal will be to attain a 10% reduction in energy use from its 2006 baseline by 2015. To reach this goal, the City will have to achieve another 70,236 kWh of annual savings by 2015.



- **Silver Leadership Level:** The City aspires to reach SCE's Silver Energy Leader Partnership by 2015. (See Section X for leadership level criteria.) As a Valued Partner the City has already:
 - Enrolled in California's Statewide Flex Alert program
 - Registered one facility to participate in an SCE Demand Response program
 - Completed an integrated demand-side management audit

To reach the Silver level, and depending on the City's ability to fund staff time to do so, the City of Rancho Mirage will:

- Achieve the 10% savings target presented in this plan
- Enroll at least one facility to develop a Peak Demand Reduction action plan
- Distribute Energy Solutions brochures to partner employees
- Complete an Integrated Demand Side Management Audit of all eligible facilities greater than 200 kW.
- Partner selected and was approved for Strategic Plan menu item 3.2.1
- A draft of an EAP is submitted by Partner City/County
- RFP issued or consultant hired to complete EAP

City Fleet

- To cut costs and achieve the all important balance between economy and environment, the City of Rancho Mirage will continue to improve the efficiency and to limit the emissions of its fleet by 10% respectively from 2010 baselines by 2015.

Community-Wide Policies

- **Keeping Energy Costs in Check:** The City will adopt policies and ordinances that assure access to energy efficiency and renewable energy for all. Rancho Mirage will continue to serve its residents and businesses, by helping them find energy cost savings.
- **Setting a Voluntary Community Goal of 10% by 2015:** The City and SCE also report community electricity use, where 16,144,598 kWh of annual savings (4.8% of the baseline) were achieved, from the 337,569,557 kWh baseline for community use, for 2004 to 2011. The City promoted a voluntary community wide goal of 10% below 2005 levels by 2015. Utility incentives will continue to be actively supported by the City.

Rancho Mirage

10% Goal

**Reduction of
Community-wide
Emissions By 2015**



- **Exploring Means to Green the Community's Electricity Profile:** The City of Rancho Mirage has a goal to explore means of reaching 100% green energy for the City itself, and for the community. This two to three year examination will include a review of various pilot options with SCE and IID to provide green electrons locally.

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VII. City of Rancho Mirage Energy Action Steps

For each one of the goals, the City will consider and prepare to take action. In some cases, the actions will be low cost and addressed in the short term. In some cases they will be ongoing activities to promote a healthy energy future for the entire City. Naturally, more significant capital upgrades will take longer to implement.

The projects and initiatives presented here cut across departmental lines. Ultimately, the City Manager is responsible for the execution of this Energy Action Plan adopted by Council. Within the City, the Public Works Department has overall responsibility for the ePlan and its implementation. To fully implement this Energy Action Plan, the City will complete municipal retrofit projects necessary to meet the 10% goal. Complete implementation of this ePlan would include adoption of the proposed policies consistent with the City's vision and goals.

Municipal Facilities

A Road Map for Additional Energy Savings in Municipal Facilities

In February of 2012, CVAG's Green for Life team conducted "walk-through assessments" for all municipal facilities in the City to identify additional opportunities for energy efficiency. The walk-through assessments are certainly not "investment grade audits," but they revealed a number of energy efficiency measures and potential retrofits for City consideration.

Table 7 identifies potential energy efficiency measures for City facilities. These measures, listed by facility, represent a menu of options from which to select retrofit measures to reach the 10% goal. Order of magnitude costs and savings are presented. Priority projects with a simple payback of four years or less are identified with a check mark in the column on the right. Table 8 presents the same menu of options, listed by least cost, the lowest cost measures are listed first. These tables include a general description and assumptions for each potential efficiency measure. Initiation of these projects will be a milestone in the implementation of this Energy Action Plan.

The 15 measures presented have a combined energy-savings value of 329,619 kWh, four times the 70,236 kWh "gap" to achieve the 10% goal. All costs presented are estimated gross costs, materials and labor, prior to rebates and tax credits realized by third parties. Through the Desert Cities Energy Partnership, SCE and SoCalGas may offer additional incentives for city facilities.

To fund the energy efficiency measures, the City will consider all available financing options. Through the Desert Cities Energy Partnership, SCE makes available a no-interest, on-bill financing program for energy efficiency measures. The City aggressively pursues grant opportunities and will seek grant funding when available. Although economic conditions remain a challenge, the City could consider self-funding energy efficiency measures that result in cost savings. The City may also consider an energy efficiency revolving fund.

As measures are considered, the City will refine the estimates presented herein or opt to seek competitive bids. Rancho Mirage will continue to use and refine this guide to plan projects in the coming years.

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Table 7: Rancho Mirage Energy Efficiency Measures by Facility

Equipment Type	Energy Efficiency Measure	Description of Measure with Assumptions	Annual kWh Savings	Total Project Cost	Simple Payback (Years)
City Hall 69825 Highway 111, Rancho Mirage, CA 33,677 sq.ft. Year Built: 1973					
Solar Photovoltaic Energy Generation	Potential Installation of Solar above Carports	Install PV Solar on carports for power generation. Minimal shading in parking area	197,400	\$846,000	34.0
Exterior Lighting	Parking Lot Lighting Retrofit from Mercury Vapor to LED	Mercury Vapor Parking Lot Lighting, Retrofit to LED	5,366	\$1,750	2.6
Library 71100 Highway 111, Rancho Mirage, CA 37,600 sq.ft. Year Built: 2003					
Building Envelope	Install Exterior Window Shading	Replace Existing TVs with ENERGY STAR® LCD Models	1,890	\$10,000	42.0
Interior Lighting	Remove Interior	Possible delamping of multiple interior T-8 4 light fixtures to reduce energy load	384	\$20	0.4
City Hall Annex 42520 Bob Hope Dr., Rancho Mirage, CA 10,887 sq.ft. Year Built: 1973					
Interior Lighting	Unobstruct Lighting Sensors	Remove boxes obstructing existing interior lighting sensors	206	\$75	2.9
HVAC	HVAC Roof Top Unit Change out	Change out 2 x 6 ton RTU's (SEER ?) to 2 x 6 ton RTU's (SEER ?)	8,400	\$26,400	24.9
		Change our 1 x 25 ton RTU (EER ?) to 1 x 25 ton RTU (EER ?)	30,360	\$55,000	14.4
Fire Station 50 (HQ) 70801 Highway 111, Rancho Mirage, CA 8,559 sq.ft. Year Built: 1978					
Solar Photovoltaic Energy Generation	Potential Installation of Solar above Carports	Install PV Solar on carports for power generation. Minimal shading in parking area	30,800	\$132,000	34.0
Interior Lighting	Maximize Day lighting Opportunities	Install tubular skylights in common areas and equipment bays to allow more daylight in and drive down energy used for lighting	5,120	\$5,000	7.8
Building Envelope	Single Pane to Dual Pane Window Change Out	Replace all single pane window with dual pane windows	1,140	\$18,000	125.3
Fire Station 69 71751 Gerald Ford Dr., Rancho Mirage, CA 5,000 sq.ft. Year Built: 1991					
Interior Lighting	Interior Lighting Retrofit T12 to T8	T-12 retrofit investigation throughout all fire stations	15,000	\$13,750	7.3
Corporate Yard (IID Territory) 72-201 Manufacturing Rd., Thousand Palms, CA sq.ft. N/A Year Built: N/A					
Interior Lighting	Interior Lighting Retrofit T12 to T8	Replace all T12 tube fixtures (41) with T8 tubes (82 Tubes Total)	1,640	\$2,255	10.9
Exterior Lighting	Site Lighting Retrofit	14 - 150W lights on polls to light outside area. Replace with LED	3,416	\$2,450	5.7

Equipment Type	Energy Efficiency Measure	Description of Measure with Assumptions	Annual kWh Savings	Total Project Cost	Simple Payback (Years)
HVAC	HVAC Roof Top Unit Change out	1 x 10 ton RTU's assuming existing EER 8, replace with EER 13.8	14,415	\$22,000	12.1
		2 x 5 ton RTU's assuming existing SEER 12, replace with SEER 17.1	14,082	\$22,000	12.4
			329,619	\$1,156,700	

Table 8: Rancho Mirage Energy Efficiency Measures by Least Cost

Building	Equipment Type	Energy Efficiency Measure	Description of Measure with Assumptions	Annual kWh Savings	Total Project Cost	Simple Payback (Years)
Library	Interior Lighting	Remove Interior	Possible delamping of multiple interior T-8 4 light fixtures to reduce energy load	384	\$20	0.4
City Hall Annex	Interior Lighting	Unobstruct Lighting Sensors	Remove boxes obstructing existing interior lighting sensors	206	\$75	2.9
City Hall	Exterior Lighting	Parking Lot Lighting Retrofit from Mercury Vapor to LED	Mercury Vapor Parking Lot Lighting, Retrofit to LED	5,366	\$1,750	2.6
Fire Station 69	Interior Lighting	Interior Lighting Retrofit T12 to T8	Replace all T12 tube fixtures (41) with T8 tubes (82 Tubes Total)	1,640	\$2,255	10.9
Corporate Yard	Exterior Lighting	Site Lighting Retrofit	14 - 150W lights on polls to light outside area. Replace with LED	3,416	\$2,450	5.7
Fire Station 50	Interior Lighting	Maximize Day lighting Opportunities	Install tubular skylights in common areas and equipment bays to allow more daylight in and drive down energy used for lighting	5,120	\$5,000	7.8
Library	Building Envelope	Install Exterior Window Shading	Retractable shading on west and east windows	1,890	\$10,000	42.0
Fire Station 69	Interior Lighting	Interior Lighting Retrofit T12 to T8	T-12 retrofit investigation throughout all fire stations	15,000	\$13,750	7.3
Fire Station 50	Building Envelope	Single Pane to Dual Pane Window Change Out	Replace all single pane windows with dual pane windows	1,140	\$18,000	125.3
Corporate Yard	HVAC	HVAC Roof Top Unit Change out	1 x 10 ton RTU's assuming existing EER 8, replace with EER 13.8	14,415	\$22,000	12.1
Corporate Yard	HVAC	HVAC Roof Top Unit Change out	2 x 5 ton RTU's assuming existing SEER 12, replace with SEER 17.1	14,082	\$22,000	12.4
City Hall Annex	HVAC	HVAC Roof Top Unit Change out	Change out 2 x 6 ton RTU's (SEER) to 2 x 6 ton RTU's (SEER)	8,400	\$26,400	24.9
City Hall Annex	HVAC	HVAC Roof Top Unit Change out	Change our 1 x 25 ton RTU (EER) to 1 x 25 ton RTU (EER)	30,360	\$55,000	14.4
Fire Station 50	Solar Photovoltaic Energy Generation	Potential Installation of Solar above Carports	Install PV Solar on carports for power generation. Minimal shading in parking area	30,800	\$132,000	34.0

Building	Equipment Type	Energy Efficiency Measure	Description of Measure with Assumptions	Annual kWh Savings	Total Project Cost	Simple Payback (Years)
City Hall	Solar Photovoltaic Energy Generation	Potential Installation of Solar above Carports	Install PV Solar on carports for power generation. Minimal shading in parking area	197,400	\$846,000	34.0
				329,619	\$1,154,445	

For the implementation of each energy efficiency measure, Green for Life recommends “investment-grade” audits (comprehensive engineering analysis of potential energy efficiency improvements with a distinct focus on financial concerns and return on investment) and analyses of vendor proposals for technologies and financing. Furthermore, the City’s posture will be defined by a) maintaining an opportunistic stance, b) tracking emerging technologies for cost-effectiveness, and c) investing in secure and cost-effective capital improvements.

The following bullet points present operating parameters for energy action planning in the City of Rancho Mirage, and then specific actions for municipal facilities, the municipal fleet, and community-wide policies under the City’s control.

Energy Action Plan Operating Parameters

- **Maintaining an Opportunistic Stance**
 - The City will continue to seek grants from federal, state, and regional sources.
 - Potential foundation support will also be considered and tracked.
 - Incentives from utilities and other sources (e.g. SCE, IID, SoCalGas, CVWD and South Coast Air Quality Management District) will be tracked and considered.
- **Tracking Emerging Technologies for Cost Effectiveness**
 - To continue to lead and save energy and money, projects with up to four-year paybacks will be evaluated for Council consideration.
 - As incentives change, and technology prices drop, the City will track measures for implementation, bringing all measures with less than a four-year payback to Council for capital investment project approval.
 - The Public Works Department will be responsible for an annual review of energy efficiency retrofit opportunities.
- **Investing in Cost-Effective and Secure Capital Improvements**
 - Rancho Mirage will continue to pursue investment in proven technologies.
 - The City will continue to pursue grants and incentives for energy efficiency upgrades and programs.
 - Investments will have guaranteed or assured paybacks less than or equal to four years.

Municipal Fleet

- **Maintaining Fleet Performance and Efficiency**
 - Public Works will continue to maintain the fleet for optimal performance and efficiency, including monitoring tune-ups, tire pressure, etc.
- **Offering defensive driving courses to enhance employee safety and to reduce fuel use**
 - All staff that use city-owned vehicles will be required to take an annual course that focuses on safe and fuel-efficient driving.
- **Continuing to procure alternatively fueled vehicles to the greatest degree feasible.**
 - The City will continue to analyze and purchase vehicles using lifecycle benefits for the efficiency of compressed natural gas and other efficiency solutions, such as hybrids, plug-ins, fuel cells, etc.
 - Rancho Mirage will invest in all high efficiency options with a payback equal to or less than four years. Paybacks equal to or less than four years will trigger purchases of vehicles that may have higher first costs, but lower operating costs over time.

Municipal Policies

- Rancho Mirage will continue to explore municipal policies that increase energy efficiency for the benefit of the City. Several policies will be considered in the short term:
 - Implement the City's benchmarking policy to provide best practices for benchmarking city facilities to track energy use (Master Document Appendix A).
 - Implement the City's Commissioning/Retro-Commissioning policy and practices to identify a plan for maintaining energy and cost efficiencies as well as optimal comfort and human satisfaction (Master Document Appendix B).
 - Consider establishing a revolving loan fund for internal energy efficiency upgrades. Rules for use of fund and its reimbursement will be determined.
 - Include energy policies from this Energy Action Plan in the next update of the General Plan.
 - Examine state and federal incentives for energy efficiency to augment incentives provided by SCE, SoCalGas, and IID.
 - Consider energy efficiency in capital improvement budget discussions.

Community-wide Policies

- **Green Building Program**

Rancho Mirage has adopted the Voluntary Green Building Program developed by CVAG for the Green for Life project. Rancho Mirage will:

 - Consider adopting program as mandatory in advance of Title 24 revision in 2014
 - Consider additional green building measures not included in Title 24 as technologies become accessible

- Promote green building highlighting the potential to cut costs, increase comfort, provide healthier living spaces, and boost local supply lines and products, while cutting energy use and carbon emissions.
 - Increase the value of new and existing homes with green building measures.
 - Inform property owners and builders of the benefits and marginal costs of green building through the Voluntary Green Building Program.
 - Support the Voluntary Green Building Program through policies and ordinances that do not unduly burden developers and homeowners.
 - Consider, ultimately, green building measures and higher efficiency devices with a payback of less than or equal to four years to be mandated for all new construction.
- **Supporting the Regional and Potential State PACE Program**
 Rancho Mirage will support the regional Property Assessed Clean Energy (PACE) program being developed by CVAG. PACE financing allows qualified residents to borrow from a locally administered program for energy upgrades and repay the investment via a property tax assessment instead of via traditional bank financing. Rancho Mirage will also:
 - Support the regional PACE program being developed by CVAG. PACE (Property Assessed Clean Energy funding) allows property owners to use investment capital for energy upgrades and then pay back the funding via a property tax assessment.
 - Consider CalFIRST, the statewide initiative being introduced by the California Statewide Community Development Agency (CSCDA).
 - Lend its support for legislative efforts to curtail Federal Housing Finance Authority (FHFA) actions blocking lien seniority.
 - Complement these legislative efforts by proactive planning for PACE implementation in Rancho Mirage for maximum benefit.
 - **Electric Vehicle (EV) Infrastructure**
 Rancho Mirage will follow a deliberate plan to develop an infrastructure for EVs and will:

- Establish charging/refueling stations at City facilities.
- Work with local gas stations and others to promote public charging stations.
- Continue to seek grants and partnerships to increase penetration of EVs in the community.



VIII. Tracking, Evaluation, and Continuous Improvement

Rancho Mirage will track its success systematically. This will involve a three-part process of:

1. Tracking energy use and effectiveness of energy efficiency measures
2. Evaluation
3. Continuous improvement

What can the City do better? This will be the ongoing question as energy costs are contained.

Tracking

Through the Green for Life program and funding from SCE, a utility manager system will be installed, and energy usage will be tracked monthly for Rancho Mirage's facilities. The City anticipates the installation of an Enterprise Energy Management Information System (EEMIS) in cooperation with Los Angeles County in mid-2013 that will track all the SCE accounts in the jurisdiction. This will provide a valuable snapshot of energy use, tracking month-to-month, and year-to-year. The EEMIS system will provide reports which will allow city staff to flag anomalies in energy use. The City Manager or designee will evaluate the monthly data, respond to alarms that flag unusual energy use, and share with relevant departments.

Other energy use, such as transportation fuel costs will be tracked quarterly by the Public Works Department for annual review. Based on these reviews, the City will determine energy-savings priorities, and track financing opportunities, grant opportunities, low or no-interest loans, and other funding options.

Monthly reports will be closed out at the City's fiscal year-end to show progress and note any issues that will lead to further efficiency and/or operational improvements.

Evaluation

The City of Rancho Mirage understands the importance of third-party evaluation of its efforts. While no funds are budgeted for evaluation at this time, the City welcomes regional evaluations and/or specific evaluations of its programs and services, both from an impact and a process standpoint. Ideally, the energy and cost management program outlined in this ePlan would be evaluated every two years by the City. It will answer questions such as: Have all the action steps been addressed in a timely manner? What gains have been made to cut and/or hedge future energy costs?

Continuous Improvement

Rancho Mirage will not only share its results with other CVAG cities but it will deliberately reach out to learn from others. Keeping a focus on energy management requires new and fresh concepts, new ideas to stimulate new forms of City leadership in energy management and sustainability. This leadership is critical for success. Community leaders may well infuse the process.

To the greatest degree feasible, the City will maintain an open attitude to new ideas regarding energy efficiency and energy action that might save money for the City. Energy efficiency measures that are at parity in costs, or cost less than business as usual, will continue to be explored for implementation. Periodically the City of Blythe, SCE, and/or CVAG will provide additional energy savings measures to the ePlan to offer the City with every cost effective opportunity to reduce municipal energy use.

IX. Conclusion and Next Steps

Rancho Mirage, like many other California cities and cities across America, is suffering from the economic recession. Property values have dropped, cutting property taxes, resulting in fewer resources to maintain City services. Rancho Mirage had already been impacted by unemployment and a slow-down in local business activity.

This 2012 Energy Action Plan, therefore, is an important tool. It provides a framework, a roadmap for continued savings through energy efficiency.

1. Where can the City's half-million dollar energy bill be cut?
2. Can energy cost savings provide for a police officer, a revolving energy fund, or keep the library open Sundays or later every evening?
3. How can the City help to shape its city facilities and infrastructure such that opportunities for energy efficiency are maximized and energy costs are reduced?

The City also recognizes the importance of regional initiatives, whose savings can be significant in comparison to almost all other initiatives discussed. PACE could be a "game-changer," and at almost no cost to the City.

This Rancho Mirage 2012 Energy Action Plan codifies the City's commitment to energy efficiency. The City has made significant progress towards its energy goals, achieving a 6.75% reduction from 2006 baseline values. Now additional projects are planned to attain and eclipse the 10% goal.

Next Steps

This Rancho Mirage 2012 Energy Action Plan will be considered implemented when the following steps are complete:

1. The City has achieved a 10% reduction of electricity use in its municipal facilities. This will require an additional 70,236 kWh of annual electricity savings. Concurrently, deliberate efforts will have been made to lower the energy intensity of the City's fleet of vehicles.
2. The City will work throughout the 2012–2015 timeframe to encourage its residents and businesses to achieve a community-wide 10% reduction from the 2006 baseline. The City will promote the value of efficiency for jobs and economic development and will steer residents and businesses to utility incentives and financing sources.
3. Through policy-making and regional funding collaborations and public/private partnerships, the City will continue to promote all cost-effective, energy-efficiency through capital improvements, diligent operations, third-party arrangements and financing opportunities, tapping advances in technologies and cost reductions.

Rancho Mirage

10%

Reduction Goal
By 2015



4. The City of Rancho Mirage will continue to find and define energy efficiency that the current market can bear through 2020 in conjunction with the City's Sustainability Plan and its work with the general community to reduce the City's GHG emissions.

Finally, Rancho Mirage is a Valley leader in energy efficiency, and will continue to be a leader, fully engaged and active with smart energy management. These opportunities serve as a menu for future action. Practical goals are set that can be amended and expanded over time. The City is within sight of a reasoned milestone; this ePlan defines a logical path for its achievement.

X. Southern California Edison Energy Leadership Program Level Criteria

The following criteria define the Southern California Edison Energy Leadership Program level criteria. To advance, each city must achieve increasing levels of 5%, 10%, and 20% savings in municipal electricity use from a 2006 baseline in addition to the creation and implementation of an Energy Action Plan.

In addition to municipal energy savings, the Leadership program has had a community energy savings requirement which has been replaced in 2013 with a new means of fulfilling the community requirement through community outreach.

As the criteria are met, SCE partners can advance to higher levels of greater distinction. The higher levels also provide higher incentives for energy efficiency retrofits, reflecting the degrees of difficulty in achieving greater levels of savings.

Valued Criteria

- A. Enroll in California's Statewide Flex Alert Program and implement an internal educational campaign.
- B. Complete an Integrated Demand Side Management Audit of all eligible facilities greater than 200 kW.

Silver Criteria (5% savings and initiate EAP)

The Partner City/County demonstrates initiation of an EAP to qualify for the Silver level criteria. This can include any of the following options:

- A. Partner selected and was approved for Strategic Plan menu item 3.2.1
- B. A draft of an EAP is submitted by Partner City/County
- C. RFP issued or consultant hired to complete EAP

Gold Criteria (10% savings and complete EAP)

The Partner City/County must submit a completed plan to SCE, which includes (at least) the following components:

- A. Establish long term vision and plan for energy efficiency in City/County (In kWh savings or % reduction)
- B. Clearly states the aim and objectives of the plan
- C. Records the baseline municipal energy usage (kWh)
- D. Displays the highest users (facilities) that the city should target
- E. Identifies the City/County reduction goals and milestones to help reach long term target.
- F. Provides the plan of municipal facility projects that the City/County can complete to assist in achieving their reduction (Provide savings calculated for each project)
 - i. Identify priority of projects

- ii. Identifies expected funding mechanisms to complete municipal facility EE projects
- G. Identifies any policies or procedures the City/County can implement to assist in reducing energy use
- H. Add statement/paragraph identifying all actions including (but not limited to) municipal retrofit projects and policies that will constitute meeting the "Implementation" requirement in the ELP Platinum Level
- I. Language stating the EAP's long term policies will be integrated in the local government's policy documents such as the next General Plan, climate action plan or sustainability plan

Platinum Criteria (20% savings and implement EAP)

- A. EAP approved by Council/Board
- B. Implementation actions must include the following
 - a. Evidence of inclusion (as a line item) of EAP implementation in city/county operating budget
 - i. Example: Establishment of energy revolving fund or reference to energy efficiency in the annual maintenance budget demonstrating long term implementation of EAP
 - b. Evidence of integration of EAP into long term policies such as the General Plan, climate action plan, or sustainability plan or adopt the following resolution, "RESOLVED that the completed Energy Action Plan will serve to guide the city of _____ in future energy efficiency actions and initiatives that will be incorporated in a long term policy document such as the General Plan, climate action plan, or sustainability plan."
 - c. As referenced in Gold Level H, the completion of the identified actions that were delineated in the EAP (items as invoices or signed resolutions should be provided as evidence)

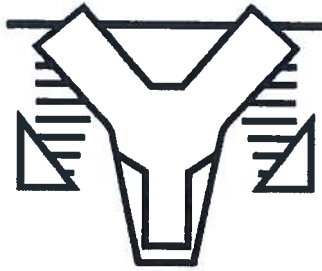
XI. Energy Leader Partnership ePlan Criteria Checklist

October 2012

This table identifies the areas of the ePlan that satisfy the SCE Energy Leader Partnership requirements.

ePlan Requirements for Gold	Page Number and Section Found
A. Establish long term vision and plan for energy efficiency in city	Executive Summary, pages 1-2 Introduction, pages 3-4
B. Clearly states the aim and objectives of the plan	Introduction, pages 3-4 Section IV. Track Record of Energy Action, pages 6-7
C. Records the baseline municipal energy usage (kWh)	Section V, Municipal Energy Usage, pages 11-13 Table 1, page 11
D. Displays the highest users (facilities) that the city should target	Table 2, page 12 Table 3, page 12 Figures 2 and 3, page 13
E. Identifies the City/County reduction goals and milestones to help reach long term target	Section VI, Energy and Cost Management Goals, - City Facilities, pages 18-19 - Community-wide Policies, pages 17-18
F. Provides the plan of municipal facility projects that the City/County can complete to assist in achieving their reduction <ul style="list-style-type: none"> i. Identify priority of projects ii. Identifies expected funding mechanisms to complete municipal facility energy efficiency projects 	Table 7: Energy Efficiency Measures by Facility, page 22 - Priority projects in Table 8 Table 8: Energy Efficiency Measures by Least Cost, page 23 Funding Mechanisms, page 20
G. Identifies any policies or procedures the City/County can implement to assist in reducing energy	Municipal Policies, page 25 Community-wide Policies, pages 25-26
H. Add statement/paragraph identifying all actions including (but not limited to) municipal retrofit projects and policies that will constitute meeting the "Implementation" requirement in the ELP Platinum Level	Energy Action Steps, pages 20-21
I. Language stating the EAP will be integrated in the next General Plan update or other policy documents	Executive Summary, page 1 Introduction, page 3 Municipal Policies, page 25

Energy Benchmarking Policy and Procedures for Municipal Buildings in the City of Rancho Mirage



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January 2013

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1.1 Benchmarking Policy and Procedures: Purpose, Goals and Objectives

1.1.1 Purpose

The purpose that Benchmarking serves is to provide City officials with a tool to assess the relative energy needs for City buildings. This policy will also provide guidance to City staff monitor energy use and report, assess and recommend changes and improvements in daily practices and long term equipment repair and replacement. The Benchmarking tool is a way to measure their success as they implement energy efficiency measures and practices.

Benchmarking and use of Energy Star Portfolio Manager or other software provide an easy-to-use and cost-effective means for the City to establish a baseline. With a set of building energy ratings, city officials can cost-effectively enact energy efficiency measures where they are needed most.

While benchmarking and the use of Portfolio Manager are not new, they are new to the Coachella Valley. The innovative aspect of this proposal is the opportunity for Rancho Mirage to evaluate and test the effectiveness of energy benchmarking and then market use of these tools to other government agencies, and businesses in the commercial and industrial sectors. Rancho Mirage will collaborate to develop the most effective and successful benchmarking policies and procedures. Through the Desert Cities Energy Partnership and the Green For Life Program, Rancho Mirage will truly lead by example.

Meeting the Requirements of California Law: AB 1103 – Nonresidential Building Benchmarking Law.

This law requires electric and gas utilities, on and after January 1, 2009, to maintain records of the energy consumption data of all nonresidential buildings to which they provide service, in a format compatible for uploading to the United States Environmental Protection Agency's Energy Star Portfolio Manager (Energy Star Portfolio Manager), for at least the most recent 12 months. An electric or gas utility is required, upon request, to upload all of the energy consumption data for a building to the Energy Star Portfolio Manager.

The law also requires, on and after January 1, 2012, that nonresidential building owners or operators disclose historical energy usage for their buildings using Energy Star Portfolio Manager benchmarking data and ratings, for the most recent 12-month period, to a prospective buyer, lessee, or lender. The information is considered

adequate to inform the prospective buyer, lessee of the entire building, or lender that would finance the entire building, of the benchmarking data and ratings for the building.

Benchmarking energy performance helps to identify best practices that can be replicated, either within a building or across a portfolio of buildings. Benchmarks can be reference points for measuring and rewarding good performance. They allow an organization to identify top-performing facilities for recognition and to prioritize poorly performing facilities for immediate improvement.

To comply with California Law AB 1103, Energy Star Portfolio Manager can generate the following required documents:

- Statement of Energy Performance: Includes the building's Energy Use Index, characteristics, contact information, and if available, the building's Energy Performance Rating
- California Energy Performance Report: Customized report established by the California Energy Commission within U.S EPA Portfolio Manager containing all data necessary to generate a Statement of Energy Performance

This Policy will fulfill the following goals:

1. Leverage existing resources, including review and assessment of similar Benchmarking policies and programs of other jurisdictions in the Valley;
2. Evaluate whether current municipal policies and procedures support efficient energy performance; and
3. Allow the City to work with other non-participating local governments and other agencies (other utilities, water districts) to encourage use of benchmarking.

1.1.2 Policy Objectives

The City is committed to long-term cultural change with respect to its use of, and attitudes about, energy. This program will provide long-term actions to reduce energy use, limit greenhouse gas emissions, promote sustainable energy practices, and make a positive impact in the Coachella Valley. The goal of the Green For Life Program is to integrate energy efficiency and climate action planning activities into the daily operations of local governments.

Benchmarking enables energy managers to determine the key metrics for assessing a building's performance, to establish baselines, and to set goals for energy performance. It also helps to identify building upgrade opportunities that can increase profitability by

lowering energy and operating costs, and it facilitates continuous improvement by providing diagnostic measures to evaluate performance over time.

1.1.3 Eligible and Ineligible Facilities

Eligible Facilities: Buildings that are eligible and required for benchmarking are those that are owned or leased by the City of Rancho Mirage and for which Rancho Mirage directly pays the energy bills, and when sub-leasing space to third parties, Rancho Mirage shall be responsible for collecting utility bill information from the lessee (if billed separately). This Policy will apply to:

Buildings with areas greater than 5,000 ft²;

AND

Buildings with occupancy greater than 50%;

AND

Buildings that operate more than 1,560 hours per year

Ineligible Facilities: This Policy will not apply to buildings with less than 11 consecutive months of energy consumption data available.

1.1.4 Benchmarking Tool Approved for Program

EPA's Energy Star Portfolio Manager will be utilized as the benchmarking tool and can be accessed at the following web site:

www.energystar.gov/benchmark

By utilizing Portfolio Manager, the City will be in compliance with California Law AB 1103. Portfolio manager is supported by South California Edison (SCE) and can utilize SCE's Automated Benchmarking Services (ABS).

1.1.5 Timelines

The City of Rancho Mirage will establish an account in Portfolio Manager, establish a portfolio of all the eligible buildings, and conduct the initial benchmark for all the eligible buildings by January 1, 2013.

1.1.6 Frequency and Triggers for Ongoing Updates

Energy Star Portfolio Manager shall be updated automatically on a monthly basis using the utility's automated benchmarking system (ABS).

1.1.7 Reporting Requirements

Once data have been collected, the specific benchmarks are to be computed for the building. Goals may be established at the building or organizational level; the exact goal will depend on the objectives of the benchmarking project that were identified at the outset. The actual benchmarking data will transform these broader objectives into quantifiable goals.

Energy Star Portfolio Manager will rank the building and will generate an Energy Star rating of 0-100. Reports to be generated from the Portfolio Manager shall include:

- a. Statement of Energy Performance that will provide an absolute Score and the building Energy Utilization Index (EUI) in the units of kBtu/sq.ft./yr
- b. Comparison Report on similar types of buildings within in Rancho Mirage
- c. Comparison Report of all the Buildings within Jurisdiction that presents a ranking sorted by the Portfolio Manager score and the EUI
- d. Comparison Report of similar type buildings in USA to present how the buildings compare to similar types of buildings within the US.
- e. Building Trending Report that compare previous year's results for the same building (Trending).

Reporting of benchmarking scores shall occur quarterly and prior to the start of major energy efficiency measure (EEM) implementation.

1.1.8 Process for Disclosure of Results

The City of Rancho Mirage will submit the results of the benchmarking process in the following methods:

Annual report to the City Manager and City Council;

AND

Annual report to the Facility's Manager, Sustainability Manager, or Energy Manager;

AND

Post results quarterly for easy access by building occupants (building lobby, cafeteria, break room, etc.);

AND

Post results annually for easy access by the community (on city web site);

1.1.9 Required Actions

This section presents a methodology for actions to be taken based on the Energy Star rating that result from the benchmarking process. The actions are triggered based on the scoring thresholds of the following:

- Top 25% of buildings (Score > 75)
- Top 51% – 26% of buildings (Score between 51 and 74)
- Lower 50% of buildings (Score < 51)

➤ **Score: Energy Star Rating greater than 75 or top quartile rating based on EUI**

For buildings that score in the top 25% or a score greater than 75, the City of Rancho Mirage will take the following actions:

Apply for the EPA Energy Star Label;

AND

Promote the accomplishment through one or more of the following methods:

Share Best Practices with other cities and community stakeholders;

AND

Develop and share a Case Study addressing the energy efficiency characteristics of the building;

AND

Post the accomplishment on the City's Web Site;

➤ **Score: Energy Star Rating between 51 and 74 or second quartile rating based on EUI**

For buildings that score in the top 51% to 26% or a score between 51 and 74, the City of Rancho Mirage will take the following actions:

Retro-commission the building according to RCx Policy and implement measures that have a simple payback of 2 years or less;

AND

Document actions taken;

AND

Estimate new benchmark based on projected energy savings from new energy efficiency measures;

AND

Update the benchmark every 6 months for the next 2 years to track progress and verify savings;

- **Score: Energy Star Rating less than 50 or bottom half (third and fourth quartile) rating based on EUI**

For buildings that score in the bottom 50% or a score less than 50, the City of Rancho Mirage will take the following actions:

Retro-Commission the building according to RCx Policy and implement measures that have a simple payback of 3 years or less;

AND/OR

Conduct an ASHRAE Level 1 energy audit and implement cost-effective measures with a total cost not to exceed 15% of the annual electric bill

AND/OR

Enter into an energy performance contract with a third party

Upon completion of one or more of the above, the City will:

Document actions taken;

AND

Estimate new benchmark based on projected energy savings;

AND

Update the benchmark every 3 months for the next 2 years to monitor progress and verify savings;

1.1.10 Policy Enforcement

The City of Rancho Mirage will assign a Facility Manager as a Benchmark Administrator who will review monthly data to verify that utility data was updated and that the recommended policy has been followed.

1.2 Benchmarking Procedures

1.2.1 Purpose

This section of the Policy provides the guidelines to the procedures for benchmarking buildings as required in the benchmarking policy.

1.2.2 Program Initiation

1.2.2.1 Assign a Benchmark Administrator

The City of Rancho Mirage shall assign a Facility Manager who will be the person responsible for conducting and/or overseeing the benchmarking process for Rancho Mirage.

1.2.2.2 Benchmark Training

The Facility Manager shall be trained on using the EPA Portfolio Manager through one or more of the following:

- CVAG Green for Life Workshops
- SCE Benchmarking Workshops
- EPA Portfolio Manager Web Site
(http://www.energystar.gov/ia/business/benchmarking_training/benchmarking.html)

1.2.2.3 Identify Buildings to be Benchmarked

The Facility Manager shall develop an inventory of all the buildings owned and leased by Rancho Mirage. The inventory data shall include the following information for each building:

- Address
- Building Name or Description
- Building Area (ft²)
- Electric Meter(s)
 - Electric Service Provider
 - Electric Account Number (all accounts)
 - Electric Meter Number (all meters)
- Gas Meter(s)
 - Natural Gas Service Provider

- Natural Gas Account Number (all accounts)
- Natural Gas Meter Number (all meters)
- Facility Point of Contact

The facilities shall be sorted by building area. The buildings to be benchmarked shall be selected based on the schedule provided in Section 1.5.4, Timelines.

1.2.2.4 Establish an Account in Portfolio Manager

The Facility Manager or his/her designee shall log onto the Portfolio Manager web site, register an account and complete the registration including a user name, password, contact information, business description, and job title. When complete, the profile shall be saved.

1.2.2.5 Authorize Benchmark Administrator to Collect Energy Data

The benchmarking process requires the collection of historical energy billing information. The Facility Manager or his/her designee will need access to the utility bills in the form of the actual hard copies of the bills or the utility's online access. If the Utility's Automated Benchmarking System is to be used for initial data population and/or monthly updates, the appropriate person within Rancho Mirage will need to sign the authorization form.

1.2.2.6 Authorize Benchmark Administrator to Collect Building-specific Data

The benchmarking process requires an understanding of building characteristics that will be input into the benchmarking tool. The Facility Manager or his/her designee will need to have access to building information such as floor plans, mechanical plans, and occupancy schedules. For some space types, the Facility Manager will need to have access to the facility to collect information on equipment in that building.

1.2.2.7 Authority to Send Benchmark Data Request Form to Tenants

If Rancho Mirage is leasing building space to a tenant who is responsible for their own energy bills (i.e. tenant has their own utility accounts that are metered separately), the Facility Manager or his/her designee will need authorization to request the tenant's utility bill information.

1.2.3 Data Collection

1.2.3.1 General Facility Information

The general facility data required to be input into the tool are as follows:

- Type of Facility (select one of the following)
 - A single facility for which my organization owns or manages 90% or more of the floor area
 - A portion of a single facility for which my organization owns or manages less than 90% of the floor space
 - A hospital composed of a single facility or collection of facilities
 - A municipal wastewater treatment plant or water treatment and distribution utility
- Add this facility to a Campus (Yes/No)
- Country
- Facility Name
- Address
- City
- State
- ZIP Code
- Year Built
- Select Organization that owns this facility
 - Add new Organization name and contact information to allow sharing of information
- Is there an energy efficiency Service and Product Provider assisting with this building?
 - Add new Contact name and contact information to allow sharing of information. Indicate if this Contact is a Professional Engineer

1.2.3.2 Area by Space Use Type

In order to identify a building's group of peers, more than 50% of the building's gross floor area (excluding parking lots and garages) must be defined by one of the following space types:

- Bank/Financial Institution
- Courthouse
- Data Center
- Hotel
- Office
- Residence Hall/Dormitory
- Warehouse (refrigerated and non-refrigerated)
- Computer Data Center
- Multifamily Housing
- Other
- Parking
- Municipal Wastewater Treatment Plant

- Swimming Pool

The following space types within Portfolio Manager are subject to the following restrictions:

Parking:

The combined floor area of all enclosed and not enclosed parking structures cannot exceed the total gross floor area of the building (where the gross floor area of the building excludes the parking floor area).

Other:

The combined floor area of any space classified as “Other” (e.g. library, restaurant, cafeteria, etc.) cannot exceed 10% of the total gross floor area of the building (where gross floor area of the building excludes the parking floor area).

Multifamily Housing:

The combined floor area of all Multifamily Housing spaces cannot exceed 10% of the total gross floor area of the building (where the gross floor area of the building excludes the parking floor area).

Municipal Wastewater Treatment Plant:

If the building is a Municipal Wastewater Treatment plant it cannot be combined with any other space types.

1.2.3.3 Benchmark Tool Specific Information

The following buildings are those in Portfolio Manager that may be included in the types of buildings that are owned or leased by the City. This section provides a listing of the data required for each type of building being benchmarked.

Courthouse applies to facility space used for federal, state, or local courts and associated office space. The total gross floor area should include all supporting functions such as temporary holding cells, kitchens used by staff, lobbies, atria, conference rooms and auditoria, fitness areas for staff, storage areas, stairways, elevator shafts, etc. The following information is required for a Courthouse Space.

- Zip code
- Gross floor area
- Weekly operating hours
- Number of workers on main shift

- Number of personal computers
- Percent of gross floor area that is air conditioned
- Percent of gross floor area that is heated

Data Center applies to spaces specifically designed and equipped to meet the needs of high density computing equipment such as server racks, used for data storage and processing. Typically these facilities require dedicated uninterruptible power supplies and cooling systems. Data center functions may include traditional enterprise services, on-demand enterprise services, high performance computing, internet facilities, and/or hosting facilities. Often Data Centers are free standing, mission critical computing centers. When a data center is located within a larger building, it will usually have its own power and cooling systems. The Data Center space is intended for sophisticated computing and server functions; it should not be used to represent a server closet or computer training area. The total gross floor area is measured between the principal exterior surfaces of the enclosing fixed walls and includes all supporting functions for the data center. This should include the entire data center, which may have raised floor computing space, server rack aisles, storage silos, control console areas, battery rooms, mechanical rooms for cooling equipment, administrative office areas, elevator shafts, stairways, break rooms and restrooms. The following information is required for a Data Center Space.

- Zip code
- Gross floor area
- IT Energy Configuration (Location of IT Energy Meter)
- Annual IT Energy

Municipal Wastewater Treatment Plant A wastewater treatment plant is a facility that is designed to treat municipal wastewater. The level of treatment at a plant will vary based on the BOD limits and the specific processes involved. This space type in Portfolio Manager is appropriate for primary, secondary, and advanced treatment facilities with or without nutrient removal. Treatment processes may include biological, chemical, and physical treatment. This space type is best applied to wastewater treatment facilities of 150 MGD or smaller. This space type does not apply to water treatment and distribution facilities.

The following information is required for wastewater treatment facilities:

- Zip code
- Average influent flow
- Average influent biological oxygen demand (BOD5)
- Average effluent biological oxygen demand (BOD5)
- Plant design flow rate
- Presence of fixed film trickle filtration process

- Presence of nutrient removal process

Office applies to facility spaces used for general office, professional, and administrative purposes. The total gross floor area should include all supporting functions such as kitchens used by staff, lobbies, atria, conference rooms and auditoria, fitness areas for staff, storage areas, stairways, elevator shafts, etc. The following information is required for an Office Space.

- Zip code
- Gross floor area
- Weekly operating hours
- Number of workers on main shift
- Number of personal computers
- Percent of gross floor area that is air conditioned
- Percent of gross floor area that is heated

Warehouse (refrigerated and non-refrigerated) Warehouse applies to unrefrigerated or refrigerated buildings that are used to store goods, manufactured products, merchandise or raw materials. The total gross floor area of Refrigerated Warehouses should include all temperature controlled areas designed to store perishable goods or merchandise under refrigeration at temperatures below 50 degrees Fahrenheit. The total gross floor area of Unrefrigerated Warehouses should include space designed to store non-perishable goods and merchandise. Unrefrigerated warehouses also include distribution centers. The total gross floor area of refrigerated and unrefrigerated warehouses should include all supporting functions such as offices, lobbies, stairways, rest rooms, equipment storage areas, elevator shafts, etc. Existing atriums or areas with high ceilings should only include the base floor area that they occupy. The total gross floor area of refrigerated or unrefrigerated warehouse should not include outside loading bays or docks. Self-storage facilities, or facilities that rent individual storage units, are not eligible for a rating using the warehouse model.

The following information is required for Unrefrigerated Warehouse Spaces.

- Zip code
- Gross floor area
- Number of walk-in coolers and refrigerators
- Weekly operating hours
- Number of workers on main shift
- Percent of gross floor area that is air conditioned
- Percent of gross floor area that is heated

The following information is required for Refrigerated Warehouse Spaces.

- Zip code

- Gross floor area
- Weekly operating hours
- Number of workers on main shift

Municipal Wastewater Treatment applies to water distribution facilities designed to pump and distribute drinking water through a network of pipes. Depending on the water source (ground or surface) a water utility may or may not contain a treatment process. The space type in Portfolio Manager is appropriate for water treatment and distribution facilities with or without treatment, and may include ground surface, and/or purchased water sources.

The following information is required for Water Treatment and Distribution Utilities:

- Zip code
- Average flow

The following buildings that do not fall under the defined energy star space type can be assigned as "OTHER" and can be benchmarked. Spaces that do not fit clearly within any available categories should be designated as "other". Other may be used to designate any space not listed in Portfolio Manager; this could include restaurants, laboratories, penitentiaries, or manufacturing facilities. If an entire facility is classified as Other, it is not eligible to receive a National energy performance rating; however, if a portion of a facility is classified as Other, it may be able to receive a National energy performance rating. To be eligible, the gross floor area of the facility must be comprised of 50% or more of an eligible space type and 10% or less of the gross floor area must be comprised of an Other space type.

The following information is required for Other Spaces.

- Gross floor area
- Weekly operating hours

The space types listed as "Other" are listed below.

- Education
 - College/University (campus-level)
- Food Sales
 - Convenience Store (with or without gas station)
 - Food Service
 - Restaurant/Cafeteria
 - Fast Food
- Health Care
 - Inpatient (Specialty Hospitals, excluding Children's)
 - Clinic/Other Outpatient Health

- Public Assembly
 - Entertainment/Culture
 - Library
 - Recreation
 - Social/Meeting
- Lodging
- Mall (Strip Mall and Enclosed)
- Public Order and Safety
 - Fire Station/Police Station
- Service
 - Vehicle Repair/Service
 - Postal Service
- Storage/Shipping
 - Self-Storage
 - Distribution/Shipping Center
- Retail
 - Vehicle Dealerships
- Other
 - Airplane hangers,
 - Laboratories
 - Crematoriums

1.2.4 Entering Utility Meter Data

Utility meters are modeled in the benchmarking tool by entering the following meter information:

- Meter Name
 - SCE meter naming convention is open to the user to use any name
 - SCG meter naming convention is to use the 10 digit account number
- Area of Facility Served by the Meter
- Meter Type
 - Energy Type
 - Units
- Is this meter currently active?

The utility meter data can be entered into Portfolio Manager either manually or through an automated benchmarking system (ABS).

Manual Meter Data Entry

When adding meters into the Portfolio Manager at the “Select Number of Meter Entries to be added and Start Date for first entry” screen, populate the fields for ***Meter Entries to Add (Months)*** and ***Start Date (MM/DD/YYYY)***, then select ***Continue***. The screen will

refresh with a table where the monthly Energy Use and Cost can be entered from the copies of the facility energy bills. When all the data is entered in the table, select **Save**.

Automated Benchmarking System (ABS)

The steps required to configure the Portfolio Manager for SCE's Automated Benchmarking System is as follows:

- Create Portfolio Manager account, building spaces and meters
- Input Meter Name based on user's preference
- From the "My Portfolio" page select link to "Automated Benchmarking Services Console"
- Electric Meters:
 - Select SCE as your Energy Service Provider
 - The following customer inputs are required:
 - Customer Account Number
 - Authentication Key
 - Customer Email
 - For AB1103 (yes or no)
 - Electric meter Service Account Number
- For additional support:
www.sce.com/business/energy-solutions/portfoliomanager.htm
- Natural Gas Meters:
 - Meter Name must be the 10 digit account number in the Meter
 - From the "My Portfolio" page select link to "Automated Benchmarking Services Console"
 - Select SoCal Gas as your
 - The following customer inputs are required
 - 10-digit Account Number
 - 8-digit Meter Number associated with above-referenced Account Number
 - Building's 5-digit zip code
 - For additional support:
www.socalgas.com/business/benchmarking/

Once the ABS systems are configured, data will be uploaded into the portfolio in approximately 24 hours.

1.2.5 Proof of Compliance

Once the Benchmarking is complete, the Facility Manager or his/her designee shall generate the "Statement of Energy Performance" report. This report shall serve as evidence of the Benchmarking as well as provide backup information to validate the accuracy of the input data. When generating the Statement of Performance Report, the Facility Manager will select the following report options:

- Statement of Energy Performance (summarizes benchmarking results)
- Energy Star Data Checklist (summarizes property's physical and operating characteristics, as well as total energy consumption)
- Facility Summary

The Facility Manager or his/her designee shall collect and archive the Statement of Energy Performance Reports and associated backup data to support inputs.

The data quality shall be validated by sampling the Statement of Energy Performance Reports and associated backup data to check that the values used in the Benchmarking tool are true and accurate.

1.2.6 Analysis

The Portfolio Manager allows users to generate 8 different reports for any building in the portfolio. These reports can be shared within the organization or other stakeholders in various file formats (xls, pdf, csv, xml). The standard Reports are as follows:

- Baseline Comparison
- Benchmark Performance
- Current Facility Status
- Emissions Performance
- Energy Performance
- Utility Cost Reports
- Water Performance Report
- Wastewater Energy Performance

Portfolio Manager Customized Reports

- Allows users to create Customized Report templates from the Portfolio Manager metrics
- Enables users to share their customized report with other users via a URL and customized instructional text
- Can be used for utility energy efficiency programs or other mandated program for improved energy efficiency at the state or local level
- Users can edit templates shared with them and upload and share data

The Facility Manager shall generate reports that address the following:

- a. Absolute Scores (Score and EUI)
- b. Compare Similar Types of Buildings in Jurisdiction

- c. Compare and Rank All Buildings within Jurisdiction
- d. Compare Similar Types of Buildings in USA
- e. Compare Previous Years for the Same Building (Trending)
- f. California Energy Performance Report

1.3 Policy Definitions

As used in this policy, the following terms shall have the following meanings:

American Society of Heating Ventilation Refrigeration (ASHRAE): An international technical engineering society for all individuals and organizations interested in heating, ventilation, air-conditioning, and refrigeration (HVAC&R)

ASHRAE Level 1 Energy Audit: This level of audit consists of a walk-through of the facility by the auditor who will interview facility managers and occupants, inspect major energy consuming systems (HVAC, lighting, building controls, office equipment, etc.) and conduct an analysis of energy bills. In some cases, one time measurements (volts, amps, temperature, lighting levels, etc.) using handheld devices will be taken to support specific audit findings. The results of the Level 1 audit are to identify energy saving opportunities at a high level with estimates of the potential savings, estimated installed costs, identification of available utility incentives and the simple payback for each identified measure.

Potential energy efficiency measure finding will range from low-cost/no-cost measures to potential capital improvements for further study.

ASHRAE Level 2 Energy Audit: This level of audit includes the features of the Level 1 plus more detailed collection of energy system nameplate data, short term monitoring and trending of system operations, detailed energy calculations and system modeling, and lifecycle financial analysis of proposed energy efficiency measures. For projects that do not require a large capital expenditure, the results of the Level 2 audit are generally adequate to make a decision to move forward on implementing a measure and to engage a vendor to provide a proposal to acquire and install the equipment.

Automated Benchmarking Service (ABS): A free web service designed to exchange energy use data and facility information, with EPA's Portfolio Manager software tool. Using XML-based Web Services provided by the EPA, third-party energy service companies can securely provide energy and building data from their systems to Portfolio Manager in exchange for receiving the EPA's energy performance rating and other related energy and environmental performance

Facility Manager: The person within the agency that is appointed to be responsible for overseeing the benchmarking process and having authority to represent the agency to the utility for the purposes of obtaining the utility billing information.

Biochemical Oxygen Demand (B.O.D.): The amount of dissolved oxygen needed by aerobic biological organisms in a body of water to break down organic material present in a given water sample at certain temperature over a specific time period. BOD is used as a gauge of the effectiveness of wastewater treatment plants.

British Thermal Unit (BTU): a measure of energy. One BTU represents the quantity of heat required to raise one pound of water by one degree Fahrenheit.

California Law: AB 1103: Existing law declares that electrical energy is essential to the health, safety, and welfare of the people and the economy of this state, and it is the state's policy to promote all feasible means of energy conservation.

Certified Energy Manager (CEM): A professional certification issued by the Association of Energy Engineers. Professionals become eligible for this certification after demonstrating expertise in several areas ranging from standards, air quality, energy audits, lighting, procurement and financing.

Energy Efficiency Measure (EEM): Any type of project or technology implemented to reduce the consumption of energy in a building without impacting operations.

Energy Star Data Checklist: In order for a building to qualify for the ENERGY STAR, a Professional Engineer (PE) or a Registered Architect (RA) must validate the accuracy of the data underlying the building's energy performance rating. This checklist is designed to provide an at-a-glance summary of a property's physical and operating characteristics, as well as its total energy consumption, to assist the PE or RA in double-checking the information that the building owner or operator has entered into Portfolio Manager.

Energy Star Portfolio Manager: An EPA web-based interactive energy benchmarking tool that allows users to track and assess energy and water consumption across a portfolio of buildings in a secure online environment.

Energy Utilization Index (EUI): A measure of the total energy consumed in a building or facility for a defined period that is expressed kBTU/ft^2

Million Gallons per Day (MGD): a rating capacity of wastewater treatment facilities.

Nonresidential Building: “Nonresidential Building” means a building of an occupancy type A, B, E, I-1, I-2, M, R1, S, and type U parking garages, as defined in the California Building Code, title 24, section 302 et seq. (2007).

Nonresidential building types include but are not limited to:

- Offices - Retail and wholesale stores;
- Restaurants - Theaters
- Schools - Storage facilities
- Commercial garages
- Factories and other industrial buildings
- Churches, and other places of assembly;
- Hospitals and other health care facilities;

Professional Engineer (PE): A registered or licensed engineers in the United States who is permitted to offer professional services directly to the public.

Registered Design Professional: An individual who is registered or licensed to practice his respective design profession as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed.

Retro-Commissioning (RCx): The process of tuning-up an existing buildings in order to ensure proper operation of major equipment, proper indoor air quality, desired occupant comfort, and optimum energy consumption of existing equipment. Retrocommissioning is a process that seeks to improve how building equipment and systems function together. Depending on the age of the building, retrocommissioning can often resolve problems that occurred during design or construction, or address problems that have developed throughout the building's life. In all, retrocommissioning improves a building's operations and maintenance (O&M) procedures to enhance overall building performance.

Southern California Edison (SCE): Electric service provider in Southern California and a partner in the Green for Life Program

Statement of Energy Performance (SEP): This document communicates information about a building's energy performance in a format that is both understandable and easy-to-use in business transactions. The Statement of Energy Performance can help you formalize performance expectations to support leasing, building sales, appraisals, insurance, staff management, and energy/O&M service contracts. The Statement of Energy Performance, validated by a Professional Engineer or Registered Architect, is a required component of your building's application for the ENERGY STAR. See Appendix A for sample copy.

United States Energy Protection Agency (US EPA): An agency of the federal government of the United States charged with protecting human health and the environment, by writing and enforcing regulations based on laws passed by Congress.

Commissioning and Retro-Commissioning Policy

for Municipal Buildings in the City of Rancho Mirage

Funded by:

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Designing Your Sustainable Future

Under:

COACHELLA VALLEY ASSOCIATION OF GOVERNMENTS



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1. Commissioning and Retro-Commissioning Policy Purpose and Objectives

1.1 Purpose

Commissioning is the process of assuring that new buildings operate at peak efficiency. Retro-Commissioning (Cx/RCx) is the process of tuning-up an existing building in order to ensure proper operation of major equipment, proper indoor air quality, desired occupant comfort, and optimum energy consumption of existing equipment.

Retro-commissioning is a process that seeks to improve how building equipment and systems function together. Depending on the age of the building, retro-commissioning can often resolve problems that occurred during design or construction, or address problems that have developed throughout the building's life. In all, retro-commissioning improves a building's operations and maintenance (O&M) procedures to enhance overall building performance.

The Commissioning and Retro-commissioning process is referred to as Cx/RCx in this document.

The Cx/RCx process consists of the following elements:

- Planning Phase
- Cx/RCx Service Provider Selection
- Baseline Requirements
- Project Boundaries
- Investigation Phase
- Savings and Economic Analysis
- Implementation Phase
- Functional Performance Testing Phase
- Facility Manager and Operator Training
- Project Reporting
- Measurement and Verification Phase

1.2 Policy Objectives

The Cx/RCx Policy is a key component in the Green for Life program. The Cx/RCx policy tiers off the City's Benchmarking Policy, which addresses the benchmarking of buildings and the tracking of energy usage through the City's Utility Manager Software system. The three parts of the program – benchmarking, utility management software and retro-commissioning -- identify energy savings and cost cutting opportunities.

2. Commissioning and Retro-commissioning Policy

2.1 Eligible and Exempt Facilities

Buildings that are eligible for commissioning or retro-commissioning under this policy are all City-owned buildings that have occupancy factors greater than 50%;

Buildings that are exempt from this commissioning or retro-commissioning policy are:

Buildings where the City is not directly responsible for the energy bills;
AND
City Leased Buildings where the landlord is responsible for the operation and maintenance of the heating and cooling systems;
AND
Buildings that are under contract to an energy performance company

2.2 Timeline

Eligible facilities shall be commissioned or retro-commissioned in accordance with the requirements as presented herein.

2.3 Frequency and Triggers

Eligible facilities shall execute the Cx/RCx Process when the one of the following triggers occurs:

The score or energy use intensity from the EPA Portfolio Manager, determined during the Benchmarking process, is less than the defined thresholds as defined in the Benchmarking Policy;
OR
A building has an increasing trend of energy usage and/or energy costs greater than 10% over the previous year;
OR
The building is experiencing a high number of complaints related to indoor comfort issues

2.4 Cx/RCx Project Manager

The City should assign a Cx/RCx Project Manager who would be the person responsible for conducting and/or overseeing the Cx/RCx process for the City. The Cx/RCx Project Manager would be responsible for managing appropriate City staff that are supporting the Cx/RCx process, managing vendors and contractors, managing budgets and managing the schedule.

2.5 Cx/RCx Process

The Cx/RCx policy should be executed through the Cx/RCx process as described in this section.

2.5.1 Retro-Commissioning Service Provider Selection

The Cx/RCx Project Manager would be responsible for overseeing the selection of a Cx/RCx Service Provider to carry out the Cx/RCx Process. The selection process and the minimum requirements for a Cx/RCx Service Provider are as follows.

- Experience and up-to-date technical knowledge in the related fields of design, construction, and operation of buildings and building systems.
- Extensive and recent hands-on field experience in all aspects of the Cx/RCx process that include:
 - Energy auditing
 - Energy savings modeling
 - Equipment operation trending
 - HVAC controls
 - HVAC design

The Cx/RCx Service Provider may be an in-house employee or a person/company that the City contracts with for the work.

The level of experience and required certification and registrations that the City should require of a Cx/RCx Service Provider are as follows:

Minimum of 5 years of Cx/RCx experience;

AND

Minimum of 5 similar Cx/RCx projects;

AND

Professional Engineer (P.E.) registered in the State of California;

2.5.2 Planning Phase

During the Planning Phase, the City should select a Cx/RCx Service Provider. The Cx/RCx Service Provider should evaluate the energy usage patterns of the facility, document current operating conditions of major equipment perform an initial site walk-through and meet with the facilities management staff. The Cx/RCx Service Provider should identify eligible project incentive programs through utility providers, local government partnerships, low cost financing, on-bill financing, and/or grants.

The Cx/RCx plan should include an audit of the entire facility and an analysis of utility bills. The Cx/RCx Service Provider should develop a Cx/RCx Plan, which should include:

General building information;
AND
Goals and scope of the project;
AND
Facility Description (Envelope);
AND
Facility Energy Consumption Information;
AND
Description of Major Systems;
AND
Description of Control Systems;
AND
Execution Plan

2.5.3 Baseline Requirements

The Cx/RCx Service Provider should establish a baseline of energy utilization of the facility. The acceptable method of establishing the project baseline is the average energy use of the most recent 36 months.

It is anticipated that the source of the data will be the energy usage data in Portfolio Manager updated through the benchmarking process or the data archived in the Utility Manager Software system.

2.5.4 Project Boundaries

The boundaries of the Cx/RCx Process that are covered by this Policy define the systems that are to be addressed. The boundary as defined by this Policy should be:

Building Envelope;
AND
Central Plant Heating and Cooling Systems;
AND
Packaged Heating and Cooling Systems;
AND
Air Handling Units;
AND
Air Distribution Systems – Including ducting and diffusers;
AND
Lighting and Lighting Control Systems;
AND
Building Control Systems;
AND

Hydronic Distribution Systems

The approach for Cx/RCx with the defined boundary should at minimum be Detailed Cx/RCx on Major Systems

2.5.5 Investigation Phase

The minimum requirements for data collection and analysis conducted during the Investigation Phase of the Cx/RCx process should include:

- Original design documentation;
- AND
- Equipment lists, with nameplate information;
- AND
- Drawings for the building's main energy consuming systems and equipment, including controls, mechanical, and electrical;
- AND
- Control system documentation, including sequences of operation, point lists, and control diagrams;
- AND
- Operation and maintenance manuals;
- AND
- Testing, adjusting and balancing (TAB) reports;
- AND
- Sensor calibration;
- AND
- Equipment operational trending;

The Cx/RCx Service Provider should perform diagnostic monitoring to gather data on when and how the systems operate. Diagnostic monitoring should identify, characterize and confirm improvement opportunities as well as begin to detect the root cause of performance deficiencies. The Cx/RCx Service Provider should use handheld meters, data loggers, and/or the building management system (BMS) to observe the buildings operation and maintenance.

2.5.6 Savings and Economic Analysis

The requirements for the savings calculation methods and tools as well as the required form of the economic metrics used to make decisions related to propose measures to be implemented should include:

- Finding description;
- AND
- Unique ID number assigned to each finding;
- AND
- Type of equipment;

AND
Description of the recommended improvement;
AND
Identification of applicable utility incentives
AND
Estimated annual energy savings and installed costs;
AND
The simple payback;
AND
Recommendations and status of implementation

The methods of calculation that are acceptable to the City are:

Measure-specific software tools;
AND
Custom models run by equipment vendors;
AND
Custom Spreadsheets;

All calculations should be certified by a PE or CEM

A Master List of Findings should be developed to document deficiencies identified from the investigation phase, including the “field fixes” made during the course of the investigation.

After the Master List of Findings is complete, the Cx/RCx Service Provider should present the results to the Cx/RCx Project Manager and should recommend the measures to be implemented.

2.5.7 Implementation Phase

The selection and implementation of the improvements and energy efficiency measures should be made by the Cx/RCx Project Manager. Each project should be documented to include a scope of work, installed cost, incentives from an outside program, and energy savings.

The Cx/RCx Project Manager should select cost effective projects for implementation that:

Have a simple payback of 2 years or less;
OR
Measures with a total cost not to exceed 10% of the buildings annual electric bill;

The options for the City to implement the selected measures are:

Use in-house staff;
AND/OR
Turn-key implementation by outsourced Cx/RCx Service Provider;

AND/OR
Contract with a third party

2.5.8 Functional Performance Testing Phase

Functional Performance Testing should be conducted for systems addressed in the Cx/RCx Process:

Testing Protocols

The Cx/RCx Service Provider should perform Functional Performance Testing on the building's systems based on the protocols from one of the following agencies:

Portland Energy Conservation (PECI) www.peci.org ;

OR

California Commissioning Collaborative (CCC) www.cacx.org ;

Testing Procedures

The Cx/RCx Service Provider and the City should schedule the testing and make any necessary preparations, such as checking and calibrating control points or temperature sensors. Functional performance tests may be conducted during normal business hours as long as occupants are not affected.

The Cx/RCx Service Provider should conduct functional performance tests on equipment operation in defined modes by forcing the system into the defined operating modes for specified test to validate proper system operation.

The Cx/RCx Service Provider should record all project activities and observations on a pre-defined data sheet, and then ensure that all systems are returned to a "normal" state. Each system should be operated as found in defined modes of operation (i.e. heating, cooling, economizer, full load, part load, minimum load).

2.5.9 Facility Training Phase

The Cx/RCx service provider should provide training on system changes implemented by to the people who are responsible for continued operation and savings after the project is complete. The training element provides staff with the best opportunity to learn about how issues were identified and remedied as well as the new sequence of operation of major systems that have been implemented. Training sessions should be provided in the form of:

A one day training at the end of the project;

OR

Ongoing training throughout the Cx/RCx Process;

The format of the training should be:

Detailed with a step by step overview of the process;
AND/OR
Hands-on demonstrations on the affected equipment;
AND/OR
Power Point presentation overview;
AND/OR
Videotaped sessions for future reference and training;

2.5.10 Project Reporting

The Cx/RCx Service Provider should provide the project deliverables for the different phases of the Cx/RCx Process to ensure that the City Project Manager has a clear understanding of the status of the project

At a minimum, the Cx/RCx Service Provider should provide a Systems Manual and Final Report. Both of these documents shall form the basis of the content in the Facility Training Phase above.

The minimum content for each of these reports are as follows:

Systems Manual:

- Project Executive Summary
- Master list of building documentation with locations
- General building or plant description
- Systems diagram
- Building and equipment schedules
- Building control point list
- Equipment list with descriptions
- Sequences of Operation
- Control set points
- Alarm set points
- Available monitoring points and active trending capabilities
- Control graphics or diagrams
- O&M Plan
- Information on Ongoing diagnostics
- M&V Plan

Final Report:

- Executive Summary
- Project background
- The Master List of Findings, with a description of the improvements implemented

- Updated estimates of savings and the actual improvement costs for each improvement implemented
- The diagnostic / monitoring plan and annotated results
- All completed functional tests and results
- Recommended frequency for Cx/RCx by equipment type with reference to tests conducted during initial Cx/RCx
- Complete documentation of revised or new strategies implemented including set points and operating schedules
- A list of capital improvements recommended for further investigation

2.5.11 Measurement and Verification (M&V) Phase

Once the Cx/RCx project is completed, equipment or systems should be monitored to ensure that the improvements are working as expected. The M&V task can be accomplished using one of the following methods:

The Utility Management Software;

OR

IPMVP – Method C – Whole Facility: Analysis of utility meter data;

3. Definitions

American Society of Heating Ventilation Refrigeration (ASHRAE): An international technical engineering society for all individuals and organizations interested in heating, ventilation, air-conditioning, and refrigeration (HVAC&R)

Association of Energy Engineers (AEE): is a nonprofit professional society of over 15,000 members in 84 countries. The mission of AEE is “to promote the scientific and educational interests of those engaged in the energy industry and to foster action for Sustainable Development.”

Benchmarking: is the ongoing monthly review of energy performance to determine if a building is getting better or worse in comparison to itself, other buildings in the portfolio, and/or peers.

Building Commissioning (Cx): A systematic quality assurance process that spans the entire design and construction process. Building commissioning helps ensure that a new building’s performance meets owner expectations by verifying and documenting that building systems and components are planned, designed, installed, tested, operated, and maintained to meet the owner’s requirements.

Building Commissioning Association (BCA): The BCA's goal is to achieve high professional standards, while allowing for the diverse and creative approaches to building commissioning that benefit our profession and its clients. For this reason, the BCA focuses on identifying critical commissioning attributes and elements, rather than attempting to dictate a rigid commissioning process.

Building Envelope: A building envelope includes all components of a building that enclose conditioned space. Building envelope components separate conditioned spaces from unconditioned spaces or from outside air. For example, walls and doors between an unheated garage and a living area are part of the building envelope; walls separating an unheated garage from the outside are not. Although floors of conditioned basements and conditioned crawlspaces are technically part of the building envelope, the code does not specify insulation requirements for these components.

Building Management System (BMS): is a computer-based control system installed in buildings that controls and monitors the building’s mechanical and electrical equipment such as ventilation, lighting, power systems, fire systems, and security systems. A BMS consists of software and hardware; the software program, usually configured in a hierarchical manner, can be proprietary

California Commissioning Collaborative (CCC): The CCC is a California nonprofit public benefit corporation. CCC's purpose is:

- To improve building and system performance by developing and promoting viable building commissioning practices in California
- To facilitate the development of cost effective programs, tools, techniques and service delivery infrastructure to enable the implementation of building commissioning processes
- To educate and inform concerning building commissioning processes
- To identify opportunities, establish priorities and promote solutions relating to building commissioning processes in California

Certified Energy Manager (CEM): a professional certification issued by the Association of Energy Engineers. Professionals become eligible for this certification after demonstrating expertise in several areas ranging from standards, air quality, energy audits, lighting, procurement and financing.

Commissioning: is a process applied to new buildings. When a building is commissioned, it undergoes an intensive quality assurance process that begins during design and continues through construction, occupancy, and operations. Commissioning ensures that the new building operates as designed and that building staff is trained and prepared to operate and maintain systems and equipment in a manner that continues proper and efficient operation.

Data Logger: A stand-alone electronic data gathering device that utilizes sensors to collect equipment information over time. Data collected shall include temperatures, pressure, current, humidity, or other operational information.

Energy Efficiency Measure (EEM): Any type of project or technology implemented to reduce the consumption of energy in a building without impacting operations.

Functional Performance Testing: Tests that evaluate the dynamic function and operation of equipment and systems using manual or automated monitoring methods and either passive observation or active testing of operation. Functional testing is the assessment of the system's ability to perform within the parameters described in the design.

Heating Cooling and Air Conditioning (HVAC): technology of indoor and automotive environmental comfort. HVAC system design is a major sub discipline of mechanical engineering, based on the principles of thermodynamics, fluid mechanics, and heat transfer.

International Performance Measurement and Verification Protocol (IPMVP): provides an overview of current best practice techniques available for verifying results of energy efficiency, water efficiency, and renewable energy projects

Implementation Phase: A document prepared by the commissioning team to provide guidance or a scope of work for implementing measures identified during the investigation.

Lifecycle Cost Savings: is a method for assessing the total cost of facility ownership. It takes into account all costs of acquiring, owning, and disposing of a building or building system. It is useful when project alternatives that fulfill the same performance requirements, but differ with respect to initial costs and operating costs, have to be compared in order to select the one that maximizes net savings.

Master List of Findings: A summary list of findings generated during the investigation process. For each finding, the list contains the following fields: finding description, type of equipment, recommended improvement, estimated energy savings and costs, simple payback, recommendations, and status of implementation.

Measurement and Verification (M&V): The process of verifying the equipment operation and energy savings associated with system upgrades and new energy efficiency measures.

National Environmental Balancing Bureau (NEBB): Established in 1971, the National Environmental Balancing Bureau (NEBB) is the premier international certification association for firms that deliver high performance building systems. Its members perform testing, adjusting and balancing (TAB) of heating, ventilating and air-conditioning systems, commission and retro-commission building systems, execute sound and vibration testing, and test and certify laboratory fume hoods and electronic and biological cleanrooms.

O&M Manuals: Written documents that provide all the information necessary for operating and maintaining installed equipment.

Portland Energy Conservation (PECI): Conservation group that promotes the benefits of responsible energy.

Professional Engineer (PE): A registered or licensed engineer in the United States who is permitted to offer professional services directly to the public.

Registered Design Professional: An individual who is registered or licensed to practice his respective design profession as defined by the statutory requirements of the professional registration laws of the state or City in which the project is to be constructed.

Commissioning or Retro-Commissioning (Cx/RCx) Service Provider: The person or firm selected to execute the retro-commissioning projects. The commissioning Service Provider should have experience and up-to-date technical knowledge in the related fields of design, construction, and building operations. The commissioning lead should also have extensive and recent hands-on field experience in all aspects of the retro-commissioning process. The commissioning lead can employ or partner with technology specialists who have expertise in systems where the commissioning lead lacks experience. The Cx/RCx Service Provider shall have a good technical knowledge of the fundamental, design, and operation of the HVAC system and the implementation of controls systems.

Retro-Commissioning (RCx): The process of tuning-up an existing buildings in order to ensure proper operation of major equipment, proper indoor air quality, desired occupant comfort, and optimum energy consumption of existing equipment. Retro-commissioning is a process that seeks to improve how building equipment and systems function together. Depending on the age of the building, retro-commissioning can often resolve problems that occurred during design or construction, or address problems that have developed throughout the building's life. In all, retro-commissioning improves a building's operations and maintenance (O&M) procedures to enhance overall building performance.

Commissioning or Retro-Commissioning (Cx/RCx) Plan: A document that defines the project's objectives, scope, schedule, documentation requirements, and the roles and responsibilities of team members.

Cx/RCx Project Manager: The person within the City that is appointed to be responsible for overseeing the Cx/RCx process and having Service Provider to represent the agency to the utility for the purposes of obtaining the utility billing information.

Return on Investment (ROI): A performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. To calculate ROI, the benefit (return) of an investment is divided by the cost of the investment; the result is expressed as a percentage or a ratio.

Sequences of Operations: A narrative describing how the mechanical, electrical, energy management, and control systems are intended to operate during start-up, shut-down, unoccupied, manual, fire, power failure, security lock-downs, and other modes of operation.

Simple Payback: An energy investment's Simple Payback Period is the amount of time it shall take to recover the initial investment in energy savings, dividing initial installed cost by the annual energy cost savings.

Systems Manual: A system-focused composite document that includes the O&M Manuals and additional information of use to the owner and building staff in operating and maintaining the facility. This document is not typically part of a new construction project unless specified.

Southern California Edison (SCE): Electric service provider in Southern California and a partner in the Green for Life Program

Testing, adjusting and balancing (TAB): The purpose of testing, adjusting, and balancing (TAB) is to assure that an HVAC system is providing maximum occupant comfort at the lowest energy cost possible.

United States Environmental Protection Agency (US EPA): An agency of the federal government of the United States charged with protecting human health and the environment, by writing and enforcing regulations based on laws passed by Congress.

